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THESIS

A NEW DEVICE FOR ESTIMATING LOCAL AREA ENLISTMENT MARKET POTENTIAL

by

Gregory Dale Citizen

June 1985

Thesis Advisor: Jules I. Borack

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A New Device for Estimating Local Area Enlistment Market Potential

by

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B.S., McNeese State University, 1976

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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ABSTRACT

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The main conclusions of the study are: a) Reasonable estimates of enlistment market potential can be obtained via a method which is relatively independent of past accessions, and b) Separate estimates of local area market potential should be determine for racial and age subgroups.

TABLE OF CONTENTS

I. INTRODUCTION AND LITERATURE REVIEW 11
- A. PROBLEM AND BACKGROUND 11
- B. OBJECTIVE 21

II. DESCRIPTION OF DATA FILE 22

III. METHODOLOGY 26
- A. ESTIMATION ASSUMPTIONS 27
- B. ESTIMATION PROCEDURE 28
- C. MODEL DEVELOPMENT 33
  - 1. Application Model 34
  - 2. Intent Model 34

IV. RESULTS 35
- A. LOCAL AREA INTEREST ESTIMATES 35
- B. LOCAL AREA APPLICATION POTENTIAL ESTIMATES . . 35
- C. APPLICATION MODEL ESTIMATES 50
- D. APPLICATION MODEL PREDICTIONS 51
- E. INTENT MODEL ESTIMATES 56
- F. INTENT MODEL PREDICTIONS 56
- G. QUALITY MODEL ESTIMATES 62
- H. QUALITY MODEL PREDICTIONS 62

V. CONCLUSIONS AND RECOMMENDATIONS 64
- A. CONCLUSIONS 64
- B. RECOMMENDATIONS 65

APPENDIX A: IDENTIFICATION OF STATES WITHIN LOCAL AREAS 67

APPENDIX B: OBSERVED AND EXPECTED NUMBER OF INDIVIDUALS WHO APPLIED FOR MILITARY SERVICE 73

APPENDIX C: OBSERVED AND EXPECTED NUMBER OF INDIVIDUALS BY INTENT LEVEL 79

APPENDIX D: APPLICATION RATES BY INTENT AND SERVICE OVER TIME 85

APPENDIX E: LOCAL AREA SAMPLE SIZE AND NATIONAL INTEREST LEVELS BY AGE 93

APPENDIX F: INITIAL APPLICATION MODEL ESTIMATES 98

APPENDIX G: INITIAL POSITIVE PROPENSITY MODEL ESTIMATES 106

APPENDIX H: QUALITY MODEL ESTIMATES AND RESULTS . . . 110

LIST OF REFERENCES 123

INITIAL DISTRIBUTION LIST 125

LIST OF TABLES

I Summary of Econometric Models Developed for Studying NPS Male Enlistments 13
II Reenlistment Rates by Survey Reenlistment Intention 16
III Enlistment Rates for Composite Intention Measure 19
IV Data Sets 24
V Background Characteristics for All Respondents and Respondents Who Took Written Test 24
VI Application Rates by Survey Enlistment Intention 25
VII Summary of Variables (Application Models) 30
VIII Summary of Variables (Propensity Model) 32
IX Local Area Interest Estimates (Mideast) 37
X Local Area Interest Estimates (Northeast) 38
XI Local Area Interest Estimates (Northwest) 39
XII Local Area Interest Estimates (Southeast) 40
XIII Local Area Interest Estimates (Southwest) 41
XIV Local Area Interest Estimates (West) 42
XV Rankings of Local Area Interest Estimates 43
XVI Local Area Application Potential For Period Spring '76 - Fall '82 43
XVII Rankings of Local Area Application Potential For Period Spring '76 - Fall '82 44
XVIII Local Area Application Potential For Spring '76 44
XIX Local Area Application Potential For Spring '77 45

XX Local Area Application Potential For Spring '78 45
XXI Local Area Application Potential For Spring '79 46
XXII Local Area Application Potential For Spring '80 46
XXIII Local Area Application Potential For Spring '81 47
XXIV Local Area Application Potential For Spring '82 47
XXV Rankings of Local Area Application Potential (Army) 48
XXVI Rankings of Local Area Application Potential (Navy) 48
XXVII Rankings of Local Area Application Potential (Air Force) 49
XXVIII Rankings of Local Area Application Potential (Marine Corps) 49
XXIX Rankings of Local Area Application Potential (Military Service) 50
XXX Final Application Model (Army) 52
XXXI Final Application Model (Navy) 52
XXXII Final Application Model (Air Force) 53
XXXIII Final Application Model (Marine Corps) 53
XXXIV Final Application Model (Military Service) 54
XXXV Application Model Results 55
XXXVI Final Positive Propensity Model (Army) 57
XXXVII Final Positive Propensity Model (Navy) 57
XXXVIII Final Positive Propensity Model (Air Force) . . . 58
XXXIX Final Positive Propensity Model (Marine Corps) 58
XL Final Positive Propensity Model (Military Service) 59

XLI Positive Propensity Model Results (Mideast) . . . 59
XLII Positive Propensity Model Results (Northeast) . . 60
XLIII Positive Propensity Model Results (Northwest) . . 60
XLIV Positive Propensity Model Results (Southeast) . . 61
XLV Positive Propensity Model Results (Southwest and West) 61

LIST OF FIGURES

1.1 Composite Measures for Intent 19

I. INTRODUCTION AND LITERATURE REVIEW

A. PROBLEM AND BACKGROUND

The report of the President's Commission on an All-Volunteer Armed Force (1970) foresaw the inevitable need for improved recruiting efforts under the volunteer era. Due to the current commitment to an all recruited force and the projected substantial decline in the U.S. population of young men [Ref. 1], the Assistant Secretary of Defense for Manpower, Installations, and Logistics (OASD,MI&L) has placed increased emphasis on identifying and examining the availability of high quality enlistees [Ref. 2]. A high quality enlistee is defined as a high school diploma graduate in Armed Forces Qualification Test (AFQT) category 1-3A.

Considerable research has been undertaken regarding the availability of manpower for military enlistment. However, little of this research has focused primarily on the impact of intentions upon the subsequent enlistment behavior of individuals. Some studies, however, have viewed intent as one of many independent variables that influence accession behavior.

Table I presents a summary of prominent econometric models developed for studying enlistment supply (Borack '84). Among these models only Hanssens and Levien (1983), Morey (1980), and Siegel and Borack (1981) used propensity to join the military service as a separate independent variable [Ref. 3].

Hanssens and Levien found, at the recruiting district level, differences in youth attitudes toward the Navy, degree of urbanization, and the proportion of high school seniors and blacks in the target market were primarily responsible for the variability in recruiting performance across Navy recruiting districts (NRD's). The significance of the attitudinal variable, propensity toward the military and toward the Navy, highlights the importance of institutional image to recruiting success. Military propensity was shown to be a strong and stable predictor of potential applicants. Navy propensity was most strongly related to direct shipment (DSHIP) contracts as opposed to delayed entry program (DEP) contracts. These findings suggest that the Navy's efforts to improve its' image as a potential employer among young males should have a beneficial effect on its' recruiting performance in the long run. [Ref. 4]

Morey (1980) used the propensity or perception of military (based on response to a survey administered twice a year) by year by district in his accession supply model [Ref. 5]. In Segal and Borack's model, the enlistment interest variable served as a proxy for omitted variables and regional "taste" differences. The interest variable was defined as the percentage of ASVAB examinees who indicated an interest in a military career. This variable was significant in regressions using 1978 and 1979 accession data. The effects of the enlistment variable was comparable to those found by Hanssens and Levien. Segal and Borack also found that with the exception of the interest variable, the estimated effects of the explanatory variables declined between 1977 and 1979. The results of this model further indicate that the quantitative relationships between enlistment behavior variables and actual enlistment are relatively stable. [Ref. 6]

Another method used to investigate the "supply" issue is via surveys of interest/intentions to enlist or reenlist. An appraisal of how accurate intentions are as predictors of future behavior was given by a RAND study of Air Force

TABLE I

Summary of Econometric Models Developed for Studying NPS Male Enlistments

Author	Service	Dependent Variables	Explanatory Variables
Amey, et al. (1976)	A, N	(HSDG I-II, HSDG III, total I-III, NHSDG I-III contracts)/17-21 male QMAs	RMC/civilian income for 17-21 males, youth UNR, advertising $, recruiters/QMAs, % black QMAs
Ash, et .al (1983)	D	(Total contracts, total accessions, white accessions, nonwhite accessions)/18-19 year-old male population	Civ/mil pay(-1), youth unemployment rate (UNR), induction probability
Brown (1983)	A	(Total contracts, AFQT I-IIIA, 18-20 population, high-school diploma graduates (HSDG) contracts, HSDG I-IIIA)/HS graduates	RMC, VEAP/RMC, civilian wage, UNR, UNR-squared, (recruiters, national/local advertising)/18-20 population
Cotterman (1983)	D	HSDG I-IIIA contracts/17-21 male population	RMC/civilian earnings, state UNR-US UNR deviation, recruiters/17-21 male population
Cowin, et .al (1980)	N	(AFQT I-IIIA, AFQT IIIB-IVA, HSDG, non-HSDG contracts)/17-21 male population, females, nonwhite school-eligible, nonwhite not school-eligible contracts	UNR, UNR (-6mos), % employed, civilian wagw, expected civilian wage, change in civilian wage, recruiters/17-21 male population, % military population
Dale, & Gilroy (1983)	D	(Total HSDG contracts, white & black HSDG contracts)/16-19 male population	RMC/civilian pay (+4), UNR, UNR (-2) (all for 16-19 males), GI bill/CPI, VEAP, bonus
De Vaney, & Saving (1982)	AF	(AFQT I-II contracts, AFQT III-VI contracts)/16-19 male population	Mil/civilian wage, employment rate, USAF recruiters/DoD recruiters, inductions/16-19 male population
Donelan (1977)	N	Age 17-21 AFQT I-II accessions	UNR, % urban QMA, % rural QMA, % black QMA, recruiters (weighted)

Table I
Summary of Econometric Models (cont'd.)

Author	Service	Dependent Variables	Explanatory Variables
Fernandez (1979)	D	(Total HSDG, HSDG I-II, HSDG IIIA HSDG IIIB contracts)/17-21 male population	RMC/civilian earnings, lagged youth UNR, recruiters, minimum wage
Goldberg,	D	Total HSDG, HSDG I-IIIA, HSDG I-II contracts	RMC/civilian pay, UNR, (youth job program $, countercyclical job program $, blacks) /17-21 male population, total 17-21 male population, Navy, Army, USAF, USMC recruiters
Goldberg, & Greenston (1983)	D	HSDG I-IIIA contracts, HSDG IIIB contracts	RMC/civilian earnings, change in UNR, avg UNR, 17-21 male population, % black males, % urban population of 17-21 males, Navy, Army, USAF, USMC recruiters
Greenston, & Toikka (1978)	N	HSDG I-II, HSDG III, HSDG IV, NHSDG I-II, NHSDG III, NHSDG IV contracts	Male youth UNR (-2), military pay (-2)/ real 18-21 male civilian pay (-1), 17-21 male population, quota/total contracts
Grissmer (1977)	D	(HSDG I-II, HSDG III, NHSDG I-III, total I-III, black HSDG I-III, nonblack HSDG I-III, nonblack HSDG I-III contracts)/17-21 male population	Mil/civilian pay, youth UNR
Grissmer, et .al (1974)	D	(Total age 17-18, total age 19-21, AFQT I-II, AFQT I-III, total HSDG, total NHSDG, black HSDG, black NHSDG contracts)/ QMAs	MIL/civilian wage, youth UNR, recruiters/QMAs, male HSDGS/male college enrollments, military residents/ population, bonds advertising $

Table I
Summary of Econometric Models (cont'd.)

Author	Service	Dependent Variables	Explanatory Variables
Hanssens, & Levien (1983)	N	Leads, delayed entry pool (DEPS), direct shipment contracts/17-21 male population	(Civilian earnings, UNR, % black, GI bill, % urban, % HS seniors, YATS propensity, recruiters, recruiting $, direct shipment goal, DEP (-1))/17-21 male population
Huck, & Allen (1978)	D	Total HSDG I-IIIA, white HSDG I-IIIA, nonwhite HSDG I-IIIA contracts	Civilian mgf pay, UNR, recruiters, QMAs (17-21 male HSDG I-IIIA, not in college)
Jehn, & Shughart (1976)	N	(Total contracts, HSDG I-IIIA contracts)/17-21 male population	UNR, per capita income, % black, % urban, median years of education, % mfg workers, % net migration (1960-70), recruiters, male enlistment quota
Morey (1980)	N	Total HSDG, HSDG I-IIIA contracts, leads	RMC/civilian pay, UNR, youth UNR % urban, DEP, YATS propensity, recruiters, minority and overall recruiting $, advertising $, HS seniors, % black
Morey, & McCann (1980)	N	(Total contracts, HSDG contracts, leads)/labor force	(Unemployed population, leads, advertising $, recruiters, HS seniors, dependent variable (-1))/labor force
Siegal, & Borack (1981)	N	Total HSDG contracts/HSDG male population	Civilian/basic military pay, (UNR recruiters (weighted), HSDG accession goal)/HSDG male population, YATS employment prospects, YATS propensity
Van Doren (1981)	N	(Total HSDG, HGSD I-II contracts)/17-21 male population	18-year-old male earnings/RMC, UNR, 17-21 male population, recruiters/17-21 male population

Note: D=all services; A=Army; N=Navy; MC=Marine Corps; AF=Air Force.

personnel [Ref. 7]. That research found a reasonably good match between survey intentions and later behavior. A later study by Chow and Polich (1980) confirmed these findings and extended them to all services and explored alternative methods for quantifying the probabilities attached to intentions expressed in surveys. Table II presents Chow and Polich findings which matched reenlistment rates with expressed intentions. Respondents were asked to rate verbally their probability of reenlisting. The results indicate that a "no" accurately foreshadows a very low actual probability (4.7%). Of those who gave a definite "yes", 86.2 percent actually reenlisted during the next year. In general, intentions were strong predictors of actual behavior [Ref. 8].

TABLE II

Reenlistment Rates by Survey Reenlistment Intention

Reenlistment Intention	Reenlistment Rate				
	Army	Navy	Force	Total	(N)
Verbal category					
yes	.816	.936	.853	.862	(497)
undecided, but probably yes	.606	.670	.597	.620	(377)
undecided, but probably no	.271	.224	.160	.216	(519)
no	.062	.068	.028	.047	(2614)
Probabability Category					
.90-1.00	.844	.959	.876	.889	(368)
.80	.816	.914	.800	.836	(128)
.70	.517	.773	.741	.667	(78)
.60	.562	.440	.638	.567	(104)
.50	.523	.615	.600	.578	(125)
.40	.423	.333	.362	.378	(132)
.30	.436	.300	.250	.326	(187)
.20	.216	.152	.082	.140	(342)
.00-.10	.064	.073	.032	.051	(2562)

Source: W.K. Chow and J.M. Polich, "Models of the First Term Reenlistment Decision", p.11.
Note: Reenlistment rates are actual voluntary reenlistments measured one year after the survey (March 1977).

Moreover, the degree of certainty with which the intention is expressed appears to make a considerable difference. The lower panel of Table II shows nine probability categories that were given to respondents in a second question about reenlistment intent. They were asked to select which probability level best approximated their predictions. The results show a close match between intentions and outcomes. For example, among respondents who said that their chances of reenlisting were 0.10 or less, only 5.1 percent did reenlist; and among those who said their probabilities were 0.90 or greater, 89 percent reenlisted. Chow and Polich concluded that for all levels of intention probability, the actual reenlistment rate is close enough to the intention level to be valuable for aggregate prediction. This means that analysts may use survey reported intentions with reasonable confidence that the intentions are valid indicators of both relative and absolute probabilities of later behavior [Ref. 9: p.10-11]

This study will examine the usefulness of enlistment intention information for the determination of local area enlistment market potential. Current estimates of local area enlistment market potential rely principally on historical accession levels. This effort will yield an additional device for targeting recruiting efforts which is relatively independent of past accessions. It will build upon a foundation developed by Orvis (1983) which analyzed enlistment intentions and subsequent follow on actions to determine the ability of enlistment survey data to predict subsequent application for military service. Orvis examined 12 waves (Spring '76 - Fall '82) of the Youth Attitude Tracking Survey (YATS) [Ref. 10] and found that of the many intention measures in the survey, a composite measure consisting of the responses to a generic future plans question and the strength of intention to enlist served as a good predictor of the enlistment decision. [Ref. 11: p. 7]

The generic future plans question asked the respondent about plans for the next few years. If the response was to "join the military", the individual was considered to have an unaided mention of plans for military service. The strength of intention question asked the respondent the likekihood of service in the military in the next few years. The respondents' potential replies consisted of "definitely", "probably", "probably not", or "definitely not", or in the instance of indecision, "don't know".

In combining the responses to these questions, Orvis developed a composite measure with four categories (see figure 1.1). Individuals in the first or most positive category were those with an unaided mention and definite intent. That is, these persons gave the reply "join the military" when asked about future plans, and stated a definite intent to join when asked specifically about the strength of their intention to serve. Persons in the second category were individuals with an unaided mention and a "probably" response when asked about strength of intent to serve. The third category consisted of individuals with a " definite " or " probably " response to the strength of intent question, but who did not have an unaided mention of plans for military service. Finally, individuals in the fourth category are those with a negative enlistment propensity. These individuals indicated they would " probably not " or "definitely not " serve in the military. This category also includes the "don't know " group. [Ref. 12: p. 8]

Orvis tracked the respondents to determine their actual enlistment decisions. His data base consisted of the first five waves of the YATS survey, covering Spring '76 through Spring '78, with the followup conducted through the end of December 1981. Table III compares enlistment and application behavior for the different intention categories. An enlistee is one who has signed a contract to perform

* What do you think you might be doing (in the next few years)?
* How likely is it that you will be serving in the military (in the next few years)?

Unaided mention and definite intention
Unaided mention and probable intention
Positive propensity, no unaided mention
Negative propensity

Figure 1.1 Composite Measures for Intent.

military service while an applicant has only taken the written exam to determined if mental standards are met. As shown in Table II, there was a strong relationship between intention level and enlistment actions.

TABLE III

Enlistment Rates for Composite Intention Measure

Composite Enlistment Intention	(%) Enlisting by December 1981	(%) Application by December 1981
Unaided mention and definite intention	49	62
Unaided mention and probable intention	32	48
Positive propensity, no unaided intention	15	25
Negative propensity	5	10

Among Orvis findings were 1) intention information produced better predictions of application and enlistment among YATS respondents than were determined on the basis of demographic data alone, 2) enlistment intention measures are valid for both high and low quality respondents, once qualification or eligibility to enlist is controlled for, 3) differences in the average enlistment intention levels across regions appear to help explain differences in the enlistment rates for these regions and 4) enlistment intention information may have possible applications in helping to target recruiting efforts or allocate resources [Ref. 13: pp. 40-41].

In the past, the geographical allocation of recruiters was based upon estimates of qualified military available (QMA) in an area [Ref. 14]. The rational for using QMA data to allocate recruiters is that it provides a measure of market size. Market size, however, is not equivalent to market potential, and it is market potential rather than size which is of importance in maximizing recruiter efficiency [Ref. 15: p. 650]. Market potential is in part related to the number of individuals qualified for enlistment, but it is also determined by the propensity of these individuals to enlist in the armed forces. Efficient allocation of recruiters require that they be redistributed from areas where the cost of recruitment is high to areas where the cost of recruitment is low so that the marginal cost of recruitment will be essentially the same in all areas.

Since each service utilizes different recruiting area boundaries, the geographic marketplaces of the QMA population for the services are distinct. Therefore, it follows that the most productive placement of recruiters for each service is somewhat dependent upon the defined location of each marketplace. Orvis' findings suggest that the probability of enlisting a desirable recruit is a function of the proportion of individuals exhibiting a positive enlistment intent within that marketplace.

B. OBJECTIVE

Therefore, it is the objective of this study to determine local area estimates of market potential using intention data. For purposes of this study, (1) a "local area" is equivalent to a military service recruiting region and (2) application levels rather than accession levels are used to estimate enlistment market potential. The local area estimates of application potential will be determined for the armed services overall as well as individual services (Army, Air Force, Marine Corps, and Navy). Appendix A provides a list of states within the six regions examined in this study.

This thesis is organized as follows; Chapter II describes the data files utilized in this effort; Chapter III presents a discussion of methodologies used to develop estimates of local area market potential; Chapter IV presents key study results along with supporting comments; Chapter V present conclusions/recommendations, and includes a discussion of the potential for use of this technique as a decision making tool.

II. DESCRIPTION OF DATA FILE

To examine the use of intention data to estimate market potential, data from the Youth Attitude Tracking Study (YATS) were used. The YATS, initiated in the Fall of 1975, is a cross-sectional tracking of 16 to 21 year-olds' attitudes, perceptions, and behavior with respect to future service in the military. The study explores such topics as enlistment propensity, reasons for not considering active duty service, contact with military recruiters and other potential influencers, generally desired job characteristics, recall of recruitment advertising, awareness of starting salary and subjective effects of proposed financial incentives, and attitudes toward draft registration. The data were collected via 30-minute telephone interviews [Ref. 16].

To conduct this study, data were extracted from a Defense Manpower Data Center YATS Cohort Match File. This file contained 13 semi annual[1] survey waves of the YATS, administered to 16 to 21 year old males between Spring 1976 and Fall 1983 (N = 79,572). Female samples were included in the Fall 1980-1983 waves but were excluded from the analysis in this study. The match file also included extracts from the Military Enlistment Processing Commands (MEPCOMS) records to determine the actual application and enlistment decisions after the survey. The follow-up period extended through March 1984, providing approximately an eight year follow-up for the earliest wave (Spring 1976) and about 3-6 months follow-up for the most recent wave (Fall 1983). The Fall '83 wave was not analyzed.

---

[1] Beginning in 1981, waves were conducted on an annual basis.

Another data file referred to as the FIPSCODE[2] file was also obtained from the Defense Manpower Data Center (DMDC). This file identifies recruiting district boundaries as they relate to state and county lines. The FIPSCODE file was merged with the survey data so that survey results and applications for military service could be identified by recruiting district. For the purposes of this study, the recruiting districts were grouped into geographical recruiting regions.[3] Since the exact regional boundaries of each service are somewhat different, caution must be exercised in interpreting this data.

Five data sets were created for the conduct of the analysis and are shown at Table IV. Data set "Surd" contained all survey results while the "Exam" data set identified those survey respondents who had applied for military service by March '84. The "Fipsrd" data set matched recruiting district lines with state and county boundaries. "Surfips" and "Surexfip" were created from combinations of the previously mentioned data sets. Data set "Surexfip" contained only those observations for which an application for military service was initiated and a social service number was given during the survey. The latter two sets exclude females and the fall '83 wave.

Table V presents a summary of the characteristics of (1) the subset of respondents who took the written test at the Military Examination Processing Commands (MEPCOMS) and (2) the characteristics of the sample as a whole. Respondents who went on to take the written test tended to be younger than the sample as a whole. Also, individuals who took the

---

[2] A fipscode is a federal state or county code obtained from a zipcode based translation file.

[3] The Navy and Marine Corps Recruiting Commands divide the nation into six distinct recruiting regions (mideast, northeast, northwest, southeast, southwest, west) while the Army and Air Force use five regional classifications (northeast, northwest, southeast, southwest, west).

TABLE IV

Data Sets

	# of Observations
Surd	79,572
Exam	79,572
Fipsrd	3125
Surfips	57,350
Surexfips	39,175

test were less likely to be high school graduates (53 percent versus 61 percent) and were more likely to be black (19 verses 12 percent).

TABLE V

Background Characteristics for All Respondents and Respondents Who Took Written Test

Characteristics	All respondents (percent)	Respondents taking test (percent)
Age		
16-17	46	53
18-19	34	32
20-21	20	15
High school graduate		
Yes	61	53
No	39	47
Race		
Black	12	19
Other	88	81

Note: Characteristics at time of survey. High school seniors were included as graduates. Total N = 39,175, with 7216 taking test.

A closer look at the intention data as it relates to applying for military service is given in Table VI. National application rates are matched with intentions expressed in the survey. The intention measure used was the respondents stated likelihood of serving in the military in the next few years. The intent to serve in a specific service was also obtained for each respondent. The results indicate that a "definitely not" response depicts a lower application rate than a "definite" response within each service and for the military service in general .i.e., only 4 percent of those individuals who gave a "definitely not" reply as their intent to join the army actually applied for army service while the application rate for the "definite" group was 23 percent. These results also indicate that although the respondents had a higher interest in the Air Force, the Army and Navy attracted more applicants.

TABLE VI

Application Rates by Survey Enlistment Intention

Enlistment Intent	% Army (N)	% Navy (N)	% Air Force (N)	% Marine Corps (N)	% Military Service (N)
Definite	23 (697)	19 (721)	12 (895)	10 (538)	47 (1476)
Probably	14 (5256)	9 (5769)	7 (6417)	4 (4295)	31 (9524)
Probably not	5 (15572)	4 (15622)	3 (15789)	1 (15307)	14 (13691)
Definitely not	4 (16921)	3 (16287)	3 (15228)	1 (18308)	11 (13478)
Don't Know	6 (729)	6 (776)	4 (846)	2 (727)	21 (1006)

Although the relationship between expressed intentions and application rates, as shown in Table VI, are not as strong as those found by Chow and Polich, intentions are clearly related to subsequent behavior. An examination of this relationship at local area levels is conducted in the following chapter.

III. METHODOLOGY

This study proposes that local area market potential can be determined in a non-traditional way by applying estimates of relative intent to join the military to the estimated magnitude of qualified manpower available (QMA) in that area. This process is expressed in Eq. (1);

$$(1) \quad MP_j = QMA_j \times R_j \mid Q$$

where MP_j = market potential in area j

QMA_j = estimated number of 17-21 year old non prior service males who are both mentally and physically qualified for military service in area j

$R_j \mid Q$ = relative level of application potential of qualified individuals in area j

The Defense Manpower Data Center (DMDC) maintains estimates of QMA.[4] This study focuses on establishing a means of estimating R_j from survey respondents intent to join the military. No effort is made to estimate MP_j for high quality individuals,--that is, those who are both HSDG and CAT I-IIIA. If this is desired, both QMA and intent must be estimated specifically for this group.

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[4] For further information, contact Paul Nichens, Defense Manpower Data Center Recruiting Marketing Network, Arlington, Virginia.

A. ESTIMATION ASSUMPTIONS

There were three assumptions basic to the development of the estimate R_j;

1. Interest is a fixed function of age and race.
2. Application rates are independent of age, race, and region.
3. The relationship between interest and application rates is stable over time.

The first of these assumptions is reasonable given that younger respondents (16-18) are less experienced and possibly less committed (job, families, college, etc) than older respondents (19-21). The expectation of adventure could account for the higher interest among younger individuals. Results of this study show that blacks are more interested in joining the military service than nonblacks. This occurrence is possibly due to the availability of fewer alternatives existing for blacks. However, race was not considered a factor in the computation of R_j due to the insufficient sample sizes which resulted when this additional category was included.

The second assumption indicates that given an individual's intent to join the military, age, race and local area are not necessary to predict the likelihood of applying for service. This assumption was not entirely valid as shown by the application model to be discussed later in this thesis. Race was found to play a significant role in predicting application rates, i.e. blacks were more likely to apply than nonblacks.

The final assumption is more difficult to justify. However, it is necessary because forecasts of market potential are made in terms of aggregate interest and application rates. Whether interest and application rates will continue to be related as they have in the past depends upon a complex set of interacting forces which impact on interest levels and subsequent behavior.

B. ESTIMATION PROCEDURE

Relative level of application potential was estimated using the formula;

$$(2) \quad R_j = \sum_i Obs_{ij} \times a_i / \sum_i Exp_{ij} \times a_i$$

where R_j = relative level of application potential of individuals in area j

Obs_{ij} = observed number of respondents with intent i in area j

a_i = aplication rates of individuals with intent i

Exp_{ij} = expected number of respondents with intent i in area j

That is, local area application potential was estimated as observed application potential in area j relative to the application potential expected from a similar sample drawn from the nation as a whole. Numerator and denominator values of equation (2) are given in Appendix B. The technique for estimating each variable in the formula is discussed below.

The observed intention estimates, obs_{ij} , were obtained directly from the YATS cohort match file via crosstabulation of the variables "region" and "likelihood of joining the military". This action produced the actual interest levels of the local areas sampled (see Appendix C).

The estimate of a was also obtained via crosstabulation of variables from the cohort match file (see Appendix F). The variables used were "likelihood of joining the military" and "service of application". The "service of application" variable identifies each survey respondents subsequent behavior toward applying for military service, i.e., answers are provided to the following questions, "Did he apply?" and "Which service?". Estimates of a_i were also generated via a regression model used to predict application rates based on the available characteristics expected to effect application (see Application Model Results, Chapter IV). The variables used in this analysis are listed in Table VII. Note that the values of a_i does not depend solely on intent level. However, it is clear that intent level contributes most strongly to the estimation of the application rates. Thus, the estimation of application potential based upon the sum of the products of the observed proportion of respondents with each intent level and the probability of an individual with a stated intent level subsequently joining the military appears reasonable.

Finally, the expected intentions in area j, Exp_{ij} , were computed using the formula

$$(3) \quad Exp_{ij} = N_{kj} \times P(i_k)$$

where N_{kj} = number of respondents of age k in area j

$P(i_k)$ = national percent of individuals of age k with intent level i

TABLE VII

Summary of Variables (Application Models)

Variable	Description
Race (2)	A dummy variable whose value is 1 if individual is black and 0 otherwise
Age (6)	Respondents age at survey (16-21)
Region (6)	Respondents residence at survey (Northeast, Northwest, Mideast, Southeast, Southwest, West)
Wave (12)	Period in which the survey was conducted (Spring 76 - Fall 82)
Intent Level (5)	Possible responses were definitely, probably, probably not, definitely not, and don't know and were obtained for composite and specific services.
Interaction (2)	Race and intent intent and region

Note: Region and intent level corresponds to specific service.
Army regions were used for overall military service model.

The estimates of N_{kj} and $P(i_k)$ were taken from the match file via crosstabulation of variables "age" and "region" and "age" and "likelihood of joining the military" respectively. Values of Exp are given in Appendix C. Estimates of $P(i_k)$ were also estimated via a regression model based on the available characteristics expected to effect interest (see Appendix G).

Note, however, that intent is strongly related to a number of demographic factors. Table VIII presents the variables used in regression analysis to predict positive propensity. The age, race and region variables strongly effect the prediction of positive propensity. Thus if samples are not corrected for discrepancies in the demographic composition of the selected samples, comparisons of interest levels between areas may be inaccurate. For example, if the sample in area A contained an inordinately large number of young individuals while area B's sample contained an unusally small number of such people, area A's estimate of the proportion of individuals with "definite" or "probable" intent might have been much higher than B's --in spite of the fact that both areas might possess equal interest levels. To correct for this possibility, the estimated application rate in each area was normalized relative to the age-specific composition of its' sample. (It is assumed that the age-specific breakdown of 16-21 year olds in most areas is essentially equal.

Regional interest estimates without the effect of application rates were obtained via formula (4);

$$4)\quad R_{ij} = Obs_{ij} / Exp_{ij}$$

where R_{ij} is the relative interest estimate in area j and values of Obs_{ij} and Exp_{ij} are the same as in equation (2). Values of R were also modified to correct for discrepancies in demographic composition of the selected samples. For example, estimated interest levels in each area were normalized relative to the age-specific composition of its' sample. The computation of R_{ij} provides a measure of regional interest levels by age relative to the nation as a whole. Local area age-specific estimates of interest were

TABLE VIII

Summary of Variables (Propensity Model)

Variable	Description
Race (2)	A dummy variable whose value is 0 if individual is black and 1 otherwise
Age (6)	Respondents age at survey (16-21)
Region (6)	Respondents residence at survey (Northeast, Northwest, Mideast, Southeast, Southwest, West)
Wave (12)	Period in which the survey was conducted (Spring 76 - Fall 82)
Intent Level (5)	Possible responses were definitely, probably, probably not, definitely not, and don't know and were obtained for composite and specific services.
Interaction (4)	Age and region Race and region Race and age Race and age and region

Note: Region and intent level corresponds to specific service.
Army regions were used for overall military service model.

obtained under the assumption that there was no age-region interaction, i.e., the effect of age on intent was the same in all areas.

C. MODEL DEVELOPMENT

The conceptual framework discussed earlier lead to the formulation of statistical models[5] to predict application rates and interest levels based on the available characteristics expected to effect applications and interest. These models were designed so that a dichotomous dependent variable Y, was related to the given vector of characteristics X by the logistic function form;

$$(4) \quad Y = P(X_i) + \text{error}$$

$$\text{where} \quad P(X_i) = 1 / (1 + \text{EXP}(-\text{Alpha} - X_i\,\text{Beta})$$

Alpha = intercept parameters

Beta = vector of regression parameters

The values of the parameters were determined using conditional maximum likelihood estimators.

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[5] A model can be constructed to establish a means for estimating the probability that a respondent is of high mental grade, i.e., Cat I-IIIA. Following Orvis' recommendations, known AFQT scores were modeled based on demographic characteristics in the survey. The variables and model results are given in Appendix H.

1. Application Model

The list of variables that were included in the initial model was presented in Table VII. The regression results for these explanatory variables are given in Appendix F. Age, region, wave and all variable interactions were deleted from the final application model due to their generally insignificant effect on predicting application probabilities.

2. Intent Model

The intent model was designed to predict the likelihood of having a positive propensity for military service. The intent responses "definitely" and "probably" were combined to form the positive propensity dependent variable. The regression results are given at Appendix G. Variable interactions and the wave main effect were not included in the final propensity model due to their weak effect on predicting propensity probabilities.

IV. RESULTS

A. LOCAL AREA INTEREST ESTIMATES

Tables IX-XIV present values of local area composite and specific military service interest estimates. These estimates reflect interest levels for the period covering Spring '76 - Fall '82. Positive propensity toward military service is inversely related to age across all services and areas. The highest positive propensity is expressed toward the Air Force across ages and areas except for the southwest and mideast. In these areas, the Navy is favored. The area of highest positive propensity toward military service is the southeast followed by the northwest, northeast, west and southwest. Among the specific services, the areas of highest positive propensity are as shown in Table XV.

The resemblence of the interest ranking for the Army and general military service may be partially due to the fact that Army recruiting regional boundaries were used in the computation of general military service interest estimates.

B. LOCAL AREA APPLICATION POTENTIAL ESTIMATES

Table XVI presents the estimates of regional application potential relative to the nation as a whole for the period Spring '76 - Fall '82. These results show that application potential for military service is approximately 11 percentage points higher in the southeast than the southwest. The northeast, southwest, and west were below national averages while the southeast and northwest were above. The regional relationships for Army application potential were consistent with those rates for military service. Again, this is partiallly due to the common regional boundaries. Application rates for the Navy and Marines were below national average rates in the mideast, northwest, northeast, and the west, but exceed them in the southeast and southwest. The range of application potential among Marine and Navy regions was 16 and 10 points respectively. Finally, the Air Force exceeded national averages in the southeast and northwest and was below them in the northeast and southwest. The west region was essentially similar to the nation as a whole. The range of application potential between Air Force regions was 8 points.

Table XVII shows the regional rankings of application potential. The order of application potential for military service, Navy, Air Force and Marine Corp are consistent with the order of interest estimates. However, the position of Army regions, northeast and southwest, are interchanged when interest estimates and application potential are ranked. Although the estimates of interest in the Army in these two areas are similar, there is approximately a two point difference in application potential.

Tables XVIII-XXIV presents the estimates of regional application potential for each year beginning Fall '76 thru Fall '82. These results show that application potential was consistently higher than national averages within the southeast and northwest regions. The other regions have been consistently below national averages with the western region consistently possessing the lowest application potential.

Tables XXV-XXIX shows the regional rankings of application potential by service for each year from Fall '76 thru Fall '82. With the exception of changes in '79, '81, and '82, the regional rankings of application potential for the Army were fairly stable. Military service rankings were also stable. The fluctuations among the other services may have been influenced by local recruiting efforts to improve past performances. The southeast was consistently the area of highest estimated application potential.

TABLE IX

Local Area Interest Estimates (Mideast)

Age	Service	Level of Interest				
		Def (%)	Prob (%)	Probn (%)	Defn (%)	DK (%)
16	A	-	-	-	-	-
	N	2.3	17.7	42.4	34.1	3.2
	AF	-	-	-	-	-
	MC	2.0	13.6	42.6	39.1	2.7
	MS	-	-	-	-	-
17	A	-	-	-	-	-
	N	1.5	15.7	42.4	39.0	2.1
	AF	-	-	-	-	-
	MC	1.0	11.8	42.0	43.4	1.8
	MS	-	-	-	-	-
18	A	-	-	-	-	-
	N	0.8	12.8	39.3	44.8	2.1
	AF	-	-	-	-	-
	MC	1.0	8.8	38.0	50.4	1.8
	MS	-	-	-	-	-
19	A	-	-	-	-	-
	N	0.8	9.8	38.2	48.7	2.1
	AF	-	-	-	-	-
	MC	1.0	6.9	35.9	54.4	1.8
	MS	-	-	-	-	-
20	A	-	-	-	-	-
	N	0.8	8.9	36.2	51.7	2.1
	AF	-	-	-	-	-
	MC	1.0	5.9	33.9	57.4	1.8
	MS	-	-	-	-	-
21	A	-	-	-	-	-
	N	0.8	7.9	34.1	55.6	2.1
	AF	-	-	-	-	-
	MC	1.0	5.8	32.6	58.8	1.8
	MS	-	-	-	-	-
Total	A	-	-	-	-	-
	N	1.3	13.4	39.8	43.1	2.4
	AF	-	-	-	-	-
	MC	1.2	9.9	38.9	48.0	2.1
	MS	-	-	-	-	-

Note: Def=definitely; Prob=probably; Probn=probably not; Defn=definitely not; DK=don't know; A=Army; N=Navy; AF=Air Force; MC=Marine Corps; MS=Military Service; The Army and Air Force do not have a distinct mideast recruiting region.

23 1250
748 58
306 108

TABLE X

Local Area Interest Estimates
(Northeast)

Age	Service	Level of Interest				
		Def (%)	Prob (%)	Probn (%)	Defn (%)	DK (%)
16	A	1.7	14.8	39.0	41.1	3.3
	N	3.0	15.9	36.8	39.1	3.1
	AF	2.6	17.3	38.1	38.8	3.2
	MC	2.1	12.4	36.8	45.6	3.1
	MS	5.2	29.9	31.5	30.1	3.4
17	A	1.7	12.9	37.9	45.3	2.2
	N	2.0	14.2	36.8	44.7	2.1
	AF	2.5	15.2	36.5	42.6	3.2
	MC	1.1	10.7	36.0	50.2	2.0
	MS	5.2	25.9	32.3	33.3	3.4
18	A	0.9	10.0	34.7	52.4	2.2
	N	1.0	11.5	34.1	51.4	2.1
	AF	1.7	11.8	35.3	49.2	2.1
	MC	1.0	7.9	31.9	57.2	2.0
	MS	3.1	18.8	31.5	43.4	3.3
19	A	0.8	8.1	32.6	56.3	2.2
	N	1.0	8.8	33.2	55.9	2.1
	AF	0.8	9.2	34.3	53.6	2.1
	MC	1.0	6.0	29.9	61.1	2.0
	MS	2.1	15.2	31.1	49.4	2.2
20	A	0.8	7.1	31.2	58.7	2.1
	N	1.0	8.0	31.4	59.2	2.1
	AF	0.8	8.2	31.9	57.1	2.1
	MC	1.0	5.1	28.0	63.9	2.0
	MS	1.0	13.1	29.7	54.0	2.2
21	A	0.8	6.2	29.3	61.6	2.1
	N	1.0	7.1	29.6	63.7	2.1
	AF	0.8	7.3	29.9	60.0	2.0
	MC	1.0	5.1	26.8	65.2	2.0
	MS	1.0	11.3	28.9	56.6	2.2
Total	A	1.3	11.0	35.4	49.9	2.5
	N	1.8	12.2	34.6	49.1	2.4
	AF	1.8	12.9	35.3	47.4	2.6
	MC	1.3	8.9	33.0	54.5	2.3
	MS	3.6	21.6	31.2	40.7	3.0

Note: Def=definitely; Prob=probably; Probn=probably not; Defn=definitely not; DK=don't know; A=Army; N=Navy; AF=Air Force; MC=Marine Corps; MS=Military Service;

TABLE XI

Local Area Interest Estimates
(Northwest)

Age	Service	Level of Interest				
		Def (%)	Prob (%)	Probn (%)	Defn (%)	DK (%)
16	A	2.2	18.7	42.6	34.2	2.5
	N	1.9	15.5	43.0	35.5	2.6
	AF	2.9	21.9	42.7	30.0	2.5
	MC	1.5	12.5	43.2	40.3	2.5
	MS	4.5	33.8	34.5	24.1	3.1
17	A	2.2	16.4	41.8	38.0	1.6
	N	1.3	13.8	43.0	40.5	1.8
	AF	2.9	19.6	41.5	33.5	2.5
	MC	0.7	10.8	42.3	44.5	1.7
	MS	4.5	29.6	35.7	27.0	3.1
18	A	1.1	13.1	39.2	45.1	1.7
	N	0.6	11.2	39.8	46.6	1.8
	AF	2.0	15.6	41.2	39.6	1.7
	MC	0.7	8.1	38.1	51.4	1.7
	MS	2.8	22.1	35.9	36.2	3.1
19	A	1.1	10.8	37.3	49.1	1.7
	N	0.6	8.6	38.8	50.7	1.8
	AF	1.0	12.4	40.8	44.0	1.7
	MC	0.7	6.3	35.9	55.4	1.7
	MS	1.9	18.2	35.9	41.9	2.1
20	A	1.1	9.5	36.1	51.7	1.7
	N	0.6	7.8	36.7	53.7	1.8
	AF	1.0	11.2	38.5	47.6	1.7
	MC	0.7	5.4	33.9	58.4	1.7
	MS	1.0	15.8	34.7	46.4	2.1
21	A	1.1	8.4	34.2	54.7	1.7
	N	0.6	6.9	34.6	57.8	1.8
	AF	1.0	10.2	36.5	50.6	1.7
	MC	0.7	5.3	32.5	59.8	1.7
	MS	1.0	13.8	34.2	48.9	2.2
Total	A	1.6	14.2	39.7	42.7	1.9
	N	1.1	11.8	40.4	44.8	2.0
	AF	2.1	16.8	40.9	38.0	2.1
	MC	0.9	9.0	39.1	49.1	1.9
	MS	3.2	25.0	35.2	33.8	2.8

Note: Def=definitely; Prob=probably; Probn=probably not; Defn=definitely not; DK=don't know; A=Army; N=Navy; AF=Air Force; MC=Marine Corps; MS=Military Service. Local area interest estimates are relative to national interest level.

TABLE XII

Local Area Interest Estimates
(Southeast)

Age	Service	Level of Interest				
		Def (%)	Prob (%)	Probn (%)	Defn (%)	DK (%)
16	A	3.1	21.4	41.4	31.4	2.7
	N	3.7	22.1	41.5	31.5	3.0
	AF	4.0	22.9	41.3	28.9	2.8
	MC	2.8	17.5	41.4	35.2	3.2
	MS	6.5	35.8	33.0	21.5	3.2
17	A	3.2	18.9	40.9	35.2	1.8
	N	2.5	19.7	41.5	36.0	2.0
	AF	4.0	20.1	40.2	32.3	2.8
	MC	1.4	15.3	41.5	39.6	2.2
	MS	6.6	31.6	34.4	24.2	3.2
18	A	1.6	15.3	38.9	42.3	1.9
	N	1.2	16.0	38.5	41.4	2.0
	AF	2.8	16.4	40.3	38.6	1.9
	MC	1.4	11.7	38.0	46.7	2.2
	MS	4.1	24.1	35.4	33.2	3.3
19	A	1.7	12.7	37.4	46.5	1.9
	N	1.2	12.3	37.5	45.0	2.0
	AF	1.4	13.2	40.2	43.2	2.0
	MC	1.5	9.2	36.3	50.8	2.2
	MS	2.8	20.1	35.9	39.0	2.3
20	A	1.7	11.2	36.2	49.0	1.9
	N	1.2	11.1	35.5	47.7	2.0
	AF	1.4	12.0	38.0	46.7	2.0
	MC	1.5	7.9	34.4	53.9	2.2
	MS	1.4	17.7	35.0	43.6	2.3
21	A	1.7	9.9	34.5	52.1	1.9
	N	1.2	9.8	33.4	51.2	2.0
	AF	1.4	10.8	36.0	49.7	2.0
	MC	1.5	7.9	33.1	55.4	2.2
	MS	1.5	15.5	34.6	46.2	2.4
Total	A	2.4	16.5	39.2	39.8	2.1
	N	2.2	17.0	39.2	39.4	2.3
	AF	3.0	17.8	40.0	36.9	2.4
	MC	1.8	13.1	38.8	43.9	2.5
	MS	4.7	27.2	34.5	30.7	2.9

Note: Def=definitely; Prob=probably; Probn=probably not; Defn=definitely not; DK=don't know; A=Army; N=Navy; AF=Air Force; MC=Marine Corps; MS=Military Service. Local area interest estimates are relative to national interest level.

TABLE XIII

Local Area Interest Estimates
(Southwest)

Age	Service	Level of Interest				
		Def (%)	Prob (%)	Probn (%)	Defn (%)	DK (%)
16	A	1.9	14.5	44.3	36.7	2.6
	N	3.3	20.8	42.3	32.3	2.3
	AF	1.9	17.4	43.5	34.5	2.7
	MC	2.2	16.9	42.3	36.5	2.1
	MS	3.9	27.8	37.0	28.3	2.9
17	A	1.9	12.6	43.1	40.6	1.7
	N	2.2	18.5	42.3	36.9	1.6
	AF	1.9	15.4	41.9	38.1	2.7
	MC	1.1	14.7	42.0	40.8	1.4
	MS	3.9	24.1	37.9	31.3	2.9
18	A	1.0	9.9	40.0	47.5	1.7
	N	1.1	15.0	39.2	42.5	1.6
	AF	1.3	12.0	40.8	44.2	1.8
	MC	1.1	11.2	38.4	47.9	1.4
	MS	2.3	17.4	36.9	40.7	2.8
19	A	1.0	8.1	37.8	51.4	1.7
	N	1.1	11.6	38.2	46.2	1.6
	AF	0.6	9.4	39.8	48.4	1.8
	MC	1.1	8.8	36.6	52.1	1.4
	MS	1.5	14.1	36.3	46.3	1.9
20	A	1.0	7.1	36.4	53.8	1.7
	N	1.1	10.4	36.1	48.9	1.6
	AF	0.6	8.5	37.2	51.9	1.8
	MC	1.1	7.5	34.7	55.2	1.5
	MS	0.8	12.1	34.7	50.1	1.9
21	A	1.0	6.2	34.3	56.8	1.7
	N	1.1	9.3	34.0	52.6	1.6
	AF	0.6	7.6	35.1	54.9	1.8
	MC	1.1	7.5	33.3	56.6	1.4
	MS	0.8	10.5	33.9	53.0	1.9
Total	A	1.4	10.8	40.6	45.3	1.9
	N	1.9	15.9	39.8	40.6	1.8
	AF	1.4	12.9	40.6	42.9	2.2
	MC	1.4	12.4	39.2	45.4	1.6
	MS	2.6	19.8	36.6	38.5	2.5

Note: Def=definitely; Prob=probably; Probn=probably not; Defn=definitely not; DK=don't know; A=Army; N=Navy; AF=Air Force; MC=Marine Corps; MS=Military Service. Local area interest estimates are relative to national interest level.

TABLE XIV

Local Area Interest Estimates
(West)

Age	Service	Level of Interest				
		Def (%)	Prob (%)	Probn (%)	Defn (%)	DK (%)
16	A	1.4	12.1	41.5	41.3	3.7
	N	3.0	17.1	39.4	35.9	3.9
	AF	2.7	21.4	39.6	33.0	3.3
	MC	1.7	10.7	40.4	43.7	3.6
	MS	5.0	27.8	34.2	29.4	3.7
17	A	1.4	10.5	40.2	45.5	2.5
	N	2.0	15.2	39.4	41.1	2.6
	AF	2.7	19.1	38.3	36.7	3.3
	MC	0.8	9.2	39.5	48.1	2.4
	MS	4.9	24.1	35.0	32.5	3.6
18	A	0.7	8.1	36.6	52.2	2.4
	N	1.0	12.3	36.5	47.2	2.6
	AF	1.8	15.0	37.8	43.1	2.2
	MC	0.8	6.8	35.1	54.9	2.4
	MS	2.9	17.4	34.1	42.2	3.5
19	A	0.7	6.6	34.3	56.1	2.4
	N	1.0	9.5	35.6	51.3	2.6
	AF	0.9	11.9	37.2	47.7	2.2
	MC	0.8	5.2	32.9	58.7	2.4
	MS	1.9	14.1	33.5	48.1	2.4
20	A	0.7	5.8	32.9	58.4	2.3
	N	1.0	8.5	33.7	54.4	2.6
	AF	0.9	10.7	34.9	51.2	2.2
	MC	0.8	4.5	30.8	61.5	2.4
	MS	1.0	12.1	32.0	52.6	2.4
21	A	0.7	5.0	30.8	61.2	2.3
	N	1.0	7.6	31.7	58.5	2.6
	AF	0.9	9.7	33.0	54.2	2.2
	MC	0.8	4.4	29.6	62.9	2.3
	MS	1.0	10.5	31.2	55.0	2.4
Total	A	1.0	8.9	37.4	50.1	2.7
	N	1.7	13.0	37.1	45.3	2.9
	AF	2.0	16.2	37.6	41.6	2.7
	MC	1.0	7.6	36.1	52.6	2.7
	MS	3.3	19.8	33.7	39.9	3.2

Note: Def=definitely; Prob=probably; Probn=probably not; Defn=definitely not; DK=don't know; A=Army; N=Navy; AF=Air Force; MC=Marine Corps; MS=Military Service. Local area interest estimates are relative to national interest level.

TABLE XV

Rankings of Local Area Interest Estimates

	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	--	6	--	6	--
Northeast	3	3	4	3	3
Northwest	2	5	2	4	2
Southeast	1	1	1	1	1
Southwest	4	2	5	2	5
West	5	4	3	5	4

Note: The Army and Air Force do not have a distinct mideast recruiting region.

TABLE XVI

Local Area Application Potential For Period Spring '76 - Fall '82

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.983	NA	0.993	NA
Northeast	0.971	0.968	0.965	0.973	0.983
Northwest	1.035	0.957	1.018	0.959	1.023
Southeast	1.081	1.056	1.045	1.087	1.074
Southwest	0.988	1.039	0.960	1.059	0.960
West	0.941	0.981	1.004	0.930	0.965

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XVII

Rankings of Local Area Application Potential For Period Spring '76 - Fall '82

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	3	NA	3	NA
Northeast	4	5	4	4	3
Northwest	2	6	2	5	2
Southeast	1	1	1	1	1
Southwest	3	2	5	2	5
West	5	4	3	6	4

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries.

TABLE XVIII

Local Area Application Potential For Spring '76

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.993	NA	0.976	NA
Northeast	0.980	0.973	0.950	0.940	1.018
Northwest	1.005	0.950	1.004	0.956	1.013
Southeast	1.047	1.049	1.076	1.030	1.032
Southwest	1.000	1.024	0.944	1.049	0.960
West	0.946	1.048	1.039	0.941	1.006

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XIX

Local Area Application Potential For Spring '77

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.970	NA	1.019	NA
Northeast	0.966	0.993	0.926	1.054	0.986
Northwest	1.037	0.976	1.032	0.960	1.013
Southeast	1.091	1.009	1.039	1.097	1.061
Southwest	0.977	1.015	0.967	1.027	0.964
West	0.936	0.992	1.023	0.969	0.973

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XX

Local Area Application Potential For Spring '78

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.939	NA	1.000	NA
Northeast	0.944	0.939	0.960	0.887	0.971
Northwest	1.063	0.936	1.028	0.959	1.035
Southeast	1.124	1.057	1.059	1.102	1.090
Southwest	0.964	1.053	0.958	1.056	0.951
West	0.922	0.992	1.002	0.934	0.964

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XXI

Local Area Application Potential For Spring '79

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.984	NA	0.986	NA
Northeast	0.990	0.967	0.996	1.008	0.994
Northwest	1.068	0.972	1.014	0.964	1.043
Southeast	1.076	1.102	1.072	1.048	1.057
Southwest	0.975	1.054	0.932	1.027	0.953
West	0.885	0.947	1.023	0.907	0.946

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XXII

Local Area Application Potential For Spring '80

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.982	NA	0.980	NA
Northeast	0.947	1.000	1.005	0.954	0.957
Northwest	1.026	0.974	0.992	0.966	1.045
Southeast	1.095	1.058	0.995	1.087	1.065
Southwest	0.985	1.038	1.000	1.079	0.970
West	0.887	0.984	1.000	0.920	0.943

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XXIII

Local Area Application Potential For Spring '81

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	0.980	NA	0.977	NA
Northeast	0.976	0.978	0.939	0.954	0.995
Northwest	1.014	0.973	1.037	0.997	1.013
Southeast	1.073	1.064	1.047	1.050	1.097
Southwest	0.958	1.030	0.986	1.061	0.968
West	0.952	0.972	0.981	0.871	0.953

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XXIV

Local Area Application Potential For Spring '82

Region	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	NA	1.074	NA	0.975	NA
Northeast	0.933	0.916	0.978	0.948	0.971
Northwest	0.992	0.939	1.024	0.966	1.001
Southeast	1.126	1.047	1.099	1.073	1.046
Southwest	1.013	1.002	1.014	1.000	0.978
West	0.907	0.966	1.028	0.915	0.955

Note: Army and Air Force only have 5 regions. The Military Service rates were determined using Army regional boundaries. These area estimates are relative to national application rates.

TABLE XXV

Rankings of Local Area Application Potential (Army)

Region	1976	1977	1978	1979	1980	1981	1982
Northeast	4	4	4	3	4	3	4
Northwest	2	2	2	2	2	2	3
Southeast	1	1	1	1	1	1	1
Southwest	3	3	3	4	3	4	2
West	5	5	5	5	5	5	5

Note: Army and Air Force only have 5 regions.

TABLE XXVI

Rankings of Local Area Application Potential (Navy)

Region	1976	1977	1978	1979	1980	1981	1982
Mideast	4	6	4	3	5	3	1
Northeast	5	3	5	5	3	4	6
Northwest	6	5	6	4	6	5	5
Southeast	1	2	1	1	1	1	2
Southwest	3	1	2	2	2	2	3
West	2	4	3	6	4	6	4

TABLE XXVII

Rankings of Local Area Application Potential (Air Force)

Region	1976	1977	1978	1979	1980	1981	1982
Northeast	4	5	4	4	1	5	5
Northwest	3	2	2	3	5	2	3
Southeast	1	1	1	1	4	1	1
Southwest	5	4	5	5	2	3	4
West	2	3	3	2	3	4	2

Note: Army and Air Force only have 5 regions.

TABLE XXVIII

Rankings of Local Area Application Potential (Marine Corps)

Region	1976	1977	1978	1979	1980	1981	1982
Mideast	3	4	3	4	3	4	3
Northeast	6	2	6	3	5	5	5
Northwest	4	6	4	5	4	3	4
Southeast	2	1	1	1	1	2	1
Southwest	1	3	2	2	2	1	2
West	5	5	5	6	6	6	6

TABLE XXIX

Rankings of Local Area Application Potential (Military Service)

Region	1976	1977	1978	1979	1980	1981	1982
Northeast	2	3	3	3	4	3	4
Northwest	3	2	2	2	2	2	2
Southeast	1	1	1	1	1	1	1
Southwest	5	5	5	4	3	4	3
West	4	4	4	5	5	5	5

C. APPLICATION MODEL ESTIMATES

In the preliminary analysis of factors which effected applications, age and interest in general military service were examined along with race and specific service interest (see Appendix G). The effects of age were inconsistent, ranging from insignificant to slightly significant, while the effects of interest in general military service were considerably weaker then interest in the specific services. These findings were valid for all services. These findings lead to the deveplopment of the final models discussed in the next paragraph.

Tables XXX-XXXV, which present the final application model parameter estimates, show that intent has a profound impact on application for military service. The intent coefficient estimates are relative to the "definite" response and are all significant with signs in the expected direction. Negative coefficients indicate that increases in the variable tend to decrease applications. A "definitely not" and "probably not" intent has a significantly negative effect on application while "probably" and "Don't Know" had a similarly less negative effect. The remaining variable coefficient estimate shows that application is not independent of race. The race coefficient estimates show that the predicted application rates for blacks are significantly different from those of nonblacks. Blacks coefficient estimates are significantly positive for military service, Army, Marine Corps, and Air Force. However, the blacks coefficient estimate for application to the Navy is significantly negative. This finding is of significant interest and merits further study. Perhaps, the images blacks have towards the Navy is reflected in this result and should therefore be a primary focus of Navy recruiting efforts.

D. APPLICATION MODEL PREDICTIONS

Table XXXV presents the projected application probabilities for the application models based on specific service interest and race. As noted, application probabilities decrease as interest decline. Estimated application rates for blacks are higher than nonblacks with the same interest except for the Navy. Although much of the blacks behavior toward military service may be accounted for due to the lack of other alternatives, the reasons for the surprising Navy result is unclear.

TABLE XXX

Final Application Model
(Army)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.5892	0.095	279.57
Blacks	0.8936	0.051	310.63
Probably	-0.4932	0.101	23.89
Probably Not	-1.4445	0.100	207.44
Definitely Not	-1.6059	0.100	255.77
Don't Know	-1.2853	0.179	51.57

Note: Model Chi-Square = 1319.10 with 5 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

TABLE XXXI

Final Application Model
(Navy)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.4203	0.097	214.30
Blacks	-0.2134	0.080	7.10
Probably	-0.8580	0.106	65.34
Probably Not	-1.8707	0.106	314.58
Definitely Not	-2.1144	0.107	389.03
Don't Know	-1.3178	0.180	53.76

Note: Model Chi-Square = 794.34 with 5 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

TABLE XXXII

Final Application Model
(Air Force)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-2.0530	0.104	368.82
Blacks	0.3041	0.072	17.69
Probably	-0.5458	0.113	23.40
Probably Not	-1.3997	0.113	154.70
Definitely Not	-1.6617	0.115	207.77
Don't Know	-1.2066	0.205	34.66

Note: Model Chi-Square = 507.20 with 5 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

TABLE XXXIII

Final Application Model
(Marine Corps)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-2.3713	0.151	247.45
Blacks	0.4303	0.103	17.60
Probably	-0.9323	0.166	31.45
Probably Not	-1.9618	0.164	143.85
Definitely Not	-2.1449	0.163	172.69
Don't Know	-1.8836	0.338	31.14

Note: Model Chi-Square = 405.33 with 5 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

TABLE XXXIV

Final Application Model (Military Service)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-0.2878	0.0535	28.90
Blacks	0.5771	0.0371	241.68
Probably	-0.6375	0.0572	124.18
Probably Not	-1.5769	0.0584	729.42
Definitely Not	-1.8708	0.0596	985.52
Don't Know	-1.1490	0.0944	148.18

Note: Model Chi-Square = 2656.11 with 5 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

TABLE XXXV

Application Model Results

Service	Level of Interest	Predicted Probabilities Black	Predicted Probabilities Other
Army	Definitely	.33	.17
	Probably	.23	.11
	Don't Know	.12	.05
	Probably Not	.11	.05
	Definitely Not	.09	.04
Navy	Definitely	.16	.19
	Probably	.08	.09
	Don't Know	.05	.06
	Probably Not	.03	.04
	Definitely Not	.02	.03
Air Force	Definitely	.15	.11
	Probably	.09	.07
	Don't Know	.05	.04
	Probably Not	.04	.03
	Definitely Not	.03	.02
Marine Corps	Definitely	.13	.09
	Probably	.05	.04
	Don't Know	.02	.01
	Probably Not	.02	.01
	Definitely Not	.02	.01
Military Service	Definitely	.57	.43
	Probably	.41	.28
	Don't Know	.30	.19
	Probably Not	.22	.13
	Definitely Not	.17	.10

E. INTENT MODEL ESTIMATES

Tables XXXVI-XL indicate that positive propensity toward military service is effected by several factors. Race and age seem to have the strongest effect on positive propensity. Blacks tend to have a higher positive interest than nonblacks while positive propensity decreases as age increases. The age coefficient estimates are relative to age 16 and are all significant in the expected direction. Presence of the negative coefficients indicate that an increase in the variable decreases positive propensity relative to a baseline category. The regional coefficient estimates are relative to the northeast region with varying effects among specific services. As expected, the southeast region has the strongest effect within each service model. The effects of the northwest region is essentially the same as the northeast in the military service and Army models and only slightly different in the Air Force model. The signs of the coefficient estimates of the southwest and west are positive for Army, Air Force and military service models but are negative in Navy and Marine Corps models.

F. INTENT MODEL PREDICTIONS

Tables XLI thru XLV presents the positive propensity model results based on race, age and local areas. As expected, positive propensity probabilities decrease with age and are higher for blacks than nonblacks across all regions and services (including Navy). Positive propensity toward military service is most similar for blacks and nonblacks relative to the Navy. The strong impact of age is evident.

TABLE XXXVI

Final Positive Propensity Model (Army)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.3089	0.0184	5035.73
Black	0.5230	0.0187	785.47
Age17	0.1645	0.0243	45.79
Age18	-0.1220	0.0283	18.56
Age19-21	-0.4119	0.0264	278.66
Midwest	0.0483	0.2622	3.34*
Southeast	0.2442	0.0262	86.74
Southwest/West	-0.1699	0.2334	52.96

Note: Variables identified by asterisks were found to be insignificant at the 5% level.

TABLE XXXVII

Final Positive Propensity Model (Navy)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.3795	0.0193	5105.23
Black	0.2979	0.0192	239.45
Age17	0.1553	0.0233	44.77
Age18	-0.1140	0.0268	18.06
Age19-21	-0.4215	0.0236	320.11
Midwest	-0.1661	0.0293	32.21
Southeast	0.1807	0.0295	37.46
Northeast	-0.0695	0.0284	5.98
Southwest/West	0.0888	0.0245	13.18

Note: Variables coefficients were estimated at the 5% significance level.

TABLE XXXVIII

Final Positive Propensity Model (Air Force)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.1789	0.0181	4232.64
Black	0.3765	0.0181	432.59
Age17	0.1999	0.0221	81.62
Age18	-0.1263	0.0257	24.22
Age19-21	-0.4690	0.0227	427.60
Midwest	0.0465	0.0232	4.03
Southeast	0.1313	0.0233	31.73
Southwest/West	-0.0461	0.0215	4.60

Note: Variables identified by asterisks were found to be insignificant at the 5% level.

TABLE XXXIX

Final Positive Propensity Model (Marine Corps)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.6509	0.0209	6253.43
Black	0.4197	0.0204	423.03
Age17	0.1342	0.0264	25.77
Age18	-0.1281	0.0307	17.39
Age19-21	-0.4145	0.0269	237.17
Midwest	-0.1249	0.0330	14,32
Southeast	0.1946	0.0336	33.57
Mideast	-0.0723	0.0315	5.25
Southwest/West	0.0373	0.0269	1.92*

Note: Variables identified by asterisks were found to be insignificant at the 5% level.

TABLE XL

Final Positive Propensity Model (Military Service)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-0.5758	0.0166	1203.17
Black	0.4125	0.0167	608.56
Age17	0.2742	0.0194	199.24
Age18	-0.1678	0.0224	55.97
Age19-21	-0.6159	0.0199	959.19
Midwest	0.0124	0.0218	0.33*
Southeast	0.1907	0.0219	76.08
Southwest/West	-0.1659	0.0185	80.27

Note: Variables identified by asterisks were found to be insignificant at the 5% level.

TABLE XLI

Positive Propensity Model Results (Mideast)

		Predicted Probabilities				
Age	Race	Army	Navy	Air Force	Marine Corps	Military Service
16	Black	-	.32	-	.29	-
	Other	-	.20	-	.15	-
17	Black	-	.27	-	.24	-
	Other	-	.17	-	.12	-
18	Black	-	.22	-	.19	-
	Other	-	.14	-	.09	-
19-21	Black	-	.17	-	.15	-
	Other	-	.10	-	.07	-

TABLE XLII

Positive Propensity Model Results
(Northeast)

		Predicted Probabilities				
Age	Race	Army	Navy	Air Force	Marine Corps	Military Service
16	Black	.37	.32	.37	.30	.58
	Other	.17	.21	.22	.16	.37
17	Black	.32	.28	.32	.24	.52
	Other	.14	.17	.18	.12	.32
18	Black	.26	.23	.26	.20	.41
	Other	.11	.14	.14	.10	.23
19-21	Black	.22	.18	.20	.16	.31
	Other	.09	.11	.10	.08	.16

TABLE XLIII

Positive Propensity Model Results
(Northwest)

		Predicted Probabilities				
Age	Race	Army	Navy	Air Force	Marine Corps	Military Service
16	Black	.41	.30	.41	.28	.59
	Other	.20	.19	.25	.14	.39
17	Black	.36	.25	.37	.23	.53
	Other	.17	.16	.21	.11	.33
18	Black	.30	.20	.29	.19	.42
	Other	.13	.12	.16	.09	.24
19-21	Black	.24	.16	.23	.15	.32
	Other	.10	.09	.12	.07	.17

TABLE XLIV

Positive Propensity Model Results (Southeast)

		Predicted Probabilities				
Age	Race	Army	Navy	Air Force	Marine Corps	Military Service
16	Black	.46	.37	.43	.35	.63
	Other	.23	.25	.26	.19	.43
17	Black	.41	.32	.38	.29	.58
	Other	.19	.21	.23	.15	.37
18	Black	.34	.27	.31	.24	.47
	Other	.15	.17	.18	.12	.26
19-21	Black	.28	.21	.24	.19	.36
	Other	.12	.12	.13	.09	.20

TABLE XLV

Positive Propensity Model Results (Southwest and West)

		Predicted Probabilities				
Age	Race	Army	Navy	Air Force	Marine Corps	Military Service
16	Black	.36	.35	.39	.31	.55
	Other	.16	.23	.23	.16	.34
17	Black	.31	.30	.34	.26	.49
	Other	.14	.19	.20	.13	.29
18	Black	.25	.25	.27	.21	.39
	Other	.11	.15	.15	.10	.21
19-21	Black	.20	.20	.21	.17	.28
	Other	.08	.12	.11	.08	.15

G. QUALITY MODEL ESTIMATES

Although not utilized to estimate relative market potential within this study, other researchers may wish to obtain estimates for high quality individuals only. Therefore, a model was developed to help identify respondents likely to be 'high-quality', i.e., mental grade 1-3A. The coefficient estimates and model predictions are given in Appendix H. It can be seen that education status, race, father's education, number of math courses and grade point average all strongly effect the quality of an individual applicant. Each of these factors are significant in the expected direction. These estimates indicate that the probability of being in mental category I-IIIA increases as education status, father's education, number of math courses, and grade point average increases. The base line responses are non-high school diploma graduates (NHSDG), less than high school, zero, northeast and west and A's and B's for education status, father's education, number of math courses, local areas, and grade point average respectively.

H. QUALITY MODEL PREDICTIONS

In Appendix H are classification tables comparing the predicted results of the quality model to the actual classification of survey respondents who took the AFQT. This model correctly classified an individual as Cat 1-3A 68.8% of the time. The success rate of classifying those survey respondents who are HSDG, NHSDG, and high school juniors (HSJR) were 67.1, 76.7 and 68.8 percent respectively.

Appendix H also shows the predicted probability of being in category 1-3A. HSDG and HSJR are considerably more likely to be in category 1-3A than NHSDG. Blacks are less likely to be in category I-IIIA than nonblacks. Note however, the racial gap narrows as the number of math courses increases. Chances of being a Cat I-IIIA improved significantly as the number of math courses increased from 0 to 4. The increased probabilities were dramatic for blacks across all regions and education levels of the father. The regions for which estimated quality probabilities are highest are southwest, northeast, west, southeast and mideast.

V. CONCLUSIONS AND RECOMMENDATIONS

The goal of this study was to show that reasonable estimates of market potential can be obtained via a method relatively independent of past accessions. Emphasis was placed on the determination of estimates of local area application potential to be applied to QMA data for the specified area. Caution should be exercised in the use of this and other survey based studies which measure intent instead of historical actions. The results of this study can be greatly altered by the implementation of new policies (e.g., decrease bonuses, retirement benefits, etc.). Also, since all survey respondents were not qualified to serve in the military, the specific results are not of immediate use. Finally, surveys measure market conditions only at a specified period in time. Various factors (e.g., international, national, and/or local events) may impact survey responses. Caution not withstanding, the following conclusions and recommendations are provided;

A. CONCLUSIONS

1. Reasonable estimates of application potential can be determined using intention data alone. The results are consistent with those of studies using other methodologies. For example, a) blacks are more likely to apply than nonblacks, b) application potential is greater in the southeast than in other regions across all services, and c) application potential is greater in the southeast and northwest for the Army and Air Force, while the best areas for the Navy and Marine Corps are the southeast and southwest.
2. Separate application potential estimates should be

determined for racial and age subgroups. Model results indicate that blacks and nonblacks behave differently toward applications for military service. Similar results were found among ages. For example, a) a black is more likely to apply for the military than a nonblack, and b) a nonblack is more likely to apply for the Navy than any other service while blacks favor the Army. This finding is of particular interest because it indicates that blacks, though highly interested in military service, find the Navy less attractive than the other major branches.

3. Local area application potential estimates are stable over time for general military service and for the Army. Application potential for the Navy, Air Force and Marine Corps have varied with time.
4. The southeast is clearly the region of highest application potential while the area of lowest potential is the west.

B. RECOMMENDATIONS

1. Future research should include a similar analysis of survey respondents who have been classified as high quality individuals. A model can be constructed to establish a means for estimating the probability that a respondent is of high mental grade, i.e., Cat 1-3A. The results of this analysis would be of immediate as current recruiting policies favor high quality recruits.
2. Application potential estimates should be determined for smaller areas (e.g., recruiting districts). These estimates would provide valuable information to those responsible for managing recruiting resources.

3. Additional work should be conducted to investigate the lagged effects of intention on applications. The presence of lagged effects indicates that intention measures may be useful in forecasting changes in enlistment rates and in assessing the effects of proposed policy changes.

4. To insure an efficient recruitment program is maintained, all available methods for gathering information relating to the availability of recruit supply should be utilized. For example, when survey results and econometric model results are in agreement, recruiting managers can proceed with confidence in the allocation of recruiting resources. Discrepancies between these methods should encourage further studies and/or caution in resource allocations.

APPENDIX A

IDENTIFICATION OF STATES WITHIN LOCAL AREAS

Mideast

Army	Navy	Air Force	Marine Corps
----	D.C.	----	D.C.
----	Indiana*	----	----
----	Kentucky*	----	Kentucky
----	Maryland	----	Maryland
----	Michigan	----	----
----	N. Carolina*	----	N. Carolina*
----	Ohio	----	Ohio*
----	Pennsylvania*	----	Pennsylvania*
----	Virginia	----	Virginia
----	West Virginia	----	West Virginia

Note: --- State or area in this row is in another region.
* Part of this state is in another region.

Northeast

Army	Navy	Air Force	Marine Corps
Connecticut	Connecticut	Connecticut	Connecticut
Delaware	Delaware	Delaware	Delaware
D.C.	----	----	----
Maine	Maine	Maine	Maine
Maryland	----	----	----
Massachusetts	Massachusetts	Massachusetts	Massachusetts
New Hampshire	New Hampshire	New Hampshire	New Hampshire
New Jersey	New Jersey	New Jersey	New Jersey
New York	New York	New York	New York
Pennsylvania	Pennsylvania*	Pennsylvania*	Pennsylvania*
Rhode Island	Rhode Island	Rhode Island	Rhode Island
Vermont	Vermont	Vermont	Vermont
---	---	West Viriginia*	---

Note: --- State or area in this row is in another region.

* Part of this state is in another region.

Northwest

Army	Navy	Air Force	Marine Corps
Illinois	Illinois	Illinois*	Illinois
Indiana*	----	Indiana*	Indiana*
Iowa	Iowa	----	----
----	Kansas*	----	----
Michigan	----	Michigan	Michigan
Minnesota	----	Minnesota*	Minnesota*
Missiouri*	Missiouri	----	Missiouri
Nebraska*	Nebraska*	----	----
North Dakota	North Dakota	North Dakato	North Dakato
Ohio	----	Ohio	Ohio
----	----	Pennsylvania*	----
South Dakota	South Dakota	----	----
Wisconsin	Wisconsin	Wisconsin	Wisconsin

Note: --- State or area in this row is in another region.

* Part of this state is in another region.

Southeast

Army	Navy	Air Force	Marine Corps
Alabama	Alabama	Alabama	Alabama
Florida	Florida	Florida	Florida
Georiga	Georiga	Georiga	Georiga
----	----	D.C.	----
Indiana*	----	Indiana*	Indiana*
Kentucky	Kentucky*	Kentucky*	----
----	----	Maryland	----
----	Mississippi	----	Mississippi
N. Carolina	N. Carolina*	N. Carolina	N. Carolina*
S. Carolina	S. Carolina	S. Carolina	S. Carolina
Tennessee*	Tennessee	Tennessee*	Tennessee
Virginia	----	Virginia	----
West Virginia	----	West Virginia*	----

Note: --- State or area in this row is in another region.
* Part of this state is in another region.

Southwest

Army	Navy	Air Force	Marine Corps
Arkansas	Arkansas	Arkansas	Arkansas
Colorada	Colorada	Colorada	Colorada
----	----	Illinois*	----
Kansas	Kansas*	Kansas*	Kansas
----	----	Kentucky*	----
Louisiana	Louisiana	Louisiana	Louisiana
----	----	Minnesota*	Minnesota*
Mississippi	----	Mississippi	----
Missiouri*	----	Missiouri	Missiouri*
Nebraska*	Nebraska*	Nebraska*	Nebraska
New Mexico	New Mexico	New Mexico*	New Mexico
Oklahoma	Oklahoma	Oklahoma*	Oklahoma
----	----	South Dakota	South Dakota
Tennessee*	----	Tennessee*	----
Texas	Texas	Texas*	Texas
Wyoming	Wyoming*	----	Wyoming

Note: --- State or area in this row is in another region.
* Part of this state is in another region.

West

Army	Navy	Air Force	Marine Corps
Alaska	Alaska	Alaska	Alaska
Arizona	Arizona	Arizona	Arizona
California	California	California	California
----	----	Colorada	----
Hawaii	Hawaii	Hawaii	Hawaii
Idaho	Idaho	Idaho	Idaho
----	----	Kansas*	----
Montanna	Montanna	Montanna	Montanna
----	----	Nebraska*	----
Nevada	Nevada	Nevada	Nevada
----	----	New Mexico*	----
----	----	Oklahoma*	----
Oregon	Oregon	Oregon	Oregon
----	----	Texas	----
Utah	Utah	Utah	Utah
Washington	Washington	Washington	Washington
----	Wyoming*	Wyoming	----

Note: --- State or area in this row is in another region.
* Part of this state is in another region.

APPENDIX B

OBSERVED AND EXPECTED NUMBER OF INDIVIDUALS WHO APPLIED FOR MILITARY SERVICE

Spring '76 - Fall '82

(Actual)

	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	----	485.9	----	169.5	----
Northeast	2311.6	524.5	496.2	120.5	2752.3
Northwest	1663.4	483.3	481.2	153.6	1934.1
Southeast	1621.5	394.8	474.3	122.3	1895.6
Southwest	2213.8	337.3	399.4	161.6	2527.2
West	1009.5	312.9	340.7	92.9	1215.6

(Expected)

	Army	Navy	Air Force	Marine Corps	Military Service
Mideast	----	494.4	----	170.7	----
Northeast	2379.8	542.1	514.5	123.9	2798.8
Northwest	1607.5	504.9	472.6	160.1	1889.9
Southeast	1500.6	374.1	453.7	112.5	1764.6
Southwest	2241.5	382.5	415.8	152.7	2631.2
West	1072.7	318.9	339.3	99.8	1259.5

Military Service

(Actual)

	'76	'77	'78	'79	'80	'81	'82
Northeast	232.4	225.8	260.5	257.9	244.0	243.3	198.0
northwest	159.7	164.6	188.8	180.5	177.7	165.5	190.7
Southeast	149.1	162.1	187.3	171.7	158.6	163.2	183.8
Southwest	213.9	211.2	239.2	237.8	228.0	218.6	176.3
West	100.2	98.2	112.0	101.7	97.9	97.0	144.0

(Expected)

	'76	'77	'78	'79	'80	'81	'82
Northeast	228.2	229.1	268.2	259.6	254.9	244.5	203.9
northwest	157.7	162.4	182.4	173.0	170.0	163.4	190.1
Southeast	144.5	152.8	171.8	162.5	148.9	143.8	175.7
Southwest	222.9	219.1	251.5	249.4	235.1	225.9	180.3
West	99.5	100.9	116.2	107.5	103.9	101.8	156.8

Marine Corps

(Actual)

	'76	'77	'78	'79	'80	'81	'82
Mideast	15.0	13.8	18.2	22.6	20.0	19.9	12.6
Northeast	10.3	9.4	11.5	16.9	12.9	15.3	10.8
Northwest	14.4	12.3	16.7	21.1	17.8	20.5	9.5
Southeast	9.5	9.8	13.5	15.8	12.0	14.5	14.5
Southwest	14.1	12.5	18.0	20.9	17.7	19.6	16.4
West	8.0	7.2	9.6	11.1	9.4	10.1	11.8

(Expected)

	'76	'77	'78	'79	'80	'81	'82
Mideast	15.4	13.5	18.2	22.9	20.4	20.4	12.9
Northeast	11.0	8.9	13.0	16.8	13.5	16.0	11.4
northwest	15.1	12.8	17.4	21.9	18.4	20.5	9.8
Southeast	9.2	8.9	13.0	16.8	13.5	16.0	11.4
Southwest	13.5	12.2	17.0	20.4	16.4	18.5	16.4
West	8.5	7.5	10.3	12.3	10.2	11.6	12.9

Army

(Actual)

	'76	'77	'78	'79	'80	'81	'82
Northeast	74.5	88.1	86.4	83.0	75.5	86.9	71.3
Northwest	52.9	66.9	66.0	59.7	54.7	60.3	70.6
Southeast	50.6	66.3	65.7	56.5	51.0	57.9	74.1
Southwest	74.7	85.3	82.6	78.6	72.8	79.0	68.4
West	31.5	37.8	36.4	30.7	28.9	35.4	50.0

(Expected)

	'76	'77	'78	'79	'80	'81	'82
Northeast	76.1	91.2	91.5	83.8	79.8	89.1	76.4
northwest	52.6	64.5	62.1	55.9	53.3	59.5	71.2
Southeast	43.3	60.8	58.5	52.5	46.6	54.0	65.8
Southwest	74.7	87.3	85.8	80.6	73.9	82.5	67.5
West	33.3	40.4	39.5	34.7	32.5	37.2	55.1

Air Force

(Actual)

	'76	'77	'78	'79	'80	'81	'82
Northeast	41.5	37.9	48.2	43.7	49.2	36.4	30.8
Northwest	39.5	41.9	47.6	42.5	43.8	35.7	34.7
Southeast	37.9	40.1	49.5	42.3	41.1	35.0	34.4
Southwest	32.9	31.9	39.6	33.0	41.1	31.7	21.1
West	28.7	27.7	33.6	28.0	29.3	23.3	32.5

(Expected)

	'76	'77	'78	'79	'80	'81	'82
Northeast	43.7	41.0	50.2	43.9	48.9	38.7	31.5
northwest	39.3	40.6	46.3	41.9	44.1	34.4	33.9
Southeast	35.2	38.6	46.8	39.5	41.3	33.5	31.3
Southwest	34.8	33.0	41.3	35.4	41.1	32.1	20.8
West	27.6	27.0	33.5	27.3	29.3	23.7	31.6

Navy

(Actual)

	'76	'77	'78	'79	'80	'81	'82
Mideast	44.9	38.8	39.9	41.5	48.6	34.1	32.4
Northeast	51.2	41.0	44.7	43.6	50.5	38.5	35.4
Northwest	47.1	39.5	42.8	43.1	47.0	36.7	25.5
Southeast	34.3	30.1	36.8	34.9	32.6	28.1	37.2
Southwest	36.6	32.1	37.0	33.0	37.3	28.8	33.0
West	29.9	24.1	27.1	23.4	27.1	21.1	32.0

(Expected)

	'76	'77	'78	'79	'80	'81	'82
Mideast	42.2	40.0	42.4	42.2	49.5	34.8	30.2
Northeast	52.7	41.2	47.6	45.0	50.5	39.3	38.6
Northwest	49.6	40.5	45.8	44.3	48.2	37.7	27.2
Southeast	32.7	29.9	34.8	31.6	30.8	26.4	35.5
Southwest	35.8	31.7	35.2	31.3	35.9	28.0	32.9
West	28.6	24.3	27.3	24.7	27.6	21.7	33.1

APPENDIX C

OBSERVED AND EXPECTED NUMBER OF INDIVIDUALS BY INTENT LEVEL

Mideast

(Actual)

	Def	Prob	Probn	Defn	Dk	N
Army	---	---	---	---	---	---
Navy	144	1454	4322	4673	258	10851
Air Force	---	---	---	---	---	---
Marine Corps	147	1177	4650	5733	245	11952
Military Service	---	---	---	---	---	---

Mideast

(Expected)

	Def	Prob	Probn	Defn	Dk	N
Army	---	---	---	---	---	---
Navy	187.2	1478.8	4182.2	4793.5	243.6	10885.3
Air Force	---	---	---	---	---	---
Marine Corps	149.1	1205.0	4547.0	5821.6	268.6	11791.3
Military Service	---	---	---	---	---	---

Northeast

(Actual)

	Def	Prob	Probn	Defn	Dk	N
Army	197	1702	5485	7728	380	15492
Navy	208	1443	4109	5822	279	11861
Air Force	242	1726	4738	6361	353	13420
Marine Corps	113	770	2853	4711	197	8644
Military Service	554	3338	4833	6305	462	15492

Northeast

(Expected)

	Def	Prob	Probn	Defn	Dk	N
Army	231.7	1870.4	6000.3	7069.3	359.8	15521.5
Navy	208.5	1631.6	4579.8	5211.1	268.1	11899.2
Air Force	291.3	2046.7	5217.4	5543.3	335.1	13433.8
Marine Corps	109.1	880.6	3297.7	4191.0	195.6	8674.1
Military Service	538.1	3507.8	5289.1	5736.3	414.1	15485.4

Northwest

(Actual)

	Def	Prob	Probn	Defn	Dk	N
Army	170	1487	4154	4469	194	10474
Navy	122	1304	4475	4962	218	11081
Air Force	260	2075	5053	4695	260	12343
Marine Corps	102	1011	4381	5509	213	11216
Military Service	335	2621	3690	3535	293	10474

Northwest

(Expected)

	Def	Prob	Probn	Defn	Dk	N
Army	155.8	1260.2	4054.2	4783.8	235.2	10493.2
Navy	191.3	1510.5	4270.8	4896.9	248.3	11118.8
Air Force	266.4	1873.9	4796.9	5111.2	307.3	12355.7
Marine Corps	139.8	1128.6	4263.3	5469.4	251.9	11254.4
Military Service	362.7	2362.0	3578.2	3886.9	279.7	10470.5

Southeast

(Actual)

	Def	Prob	Probn	Defn	Dk	N
Army	235	1616	3831	3886	202	9770
Navy	179	1387	3203	3226	186	8181
Air Force	351	2104	4732	4370	285	11842
Marine Corps	141	1027	3046	3448	194	7856
Military Service	459	2657	3368	2999	287	9770

Southeast

(Expected)

	Def	Prob	Probn	Defn	Dk	N
Army	146.0	1178.9	3784.1	4459.1	220.4	9788.5
Navy	144.1	1127.6	3162.1	3588.2	184.9	8207.9
Air Force	256.1	1802.7	4604.5	4894.9	295.1	11854.4
Marine Corps	99.1	800.0	2997.7	3808.1	177.6	7883.5
Military Service	339.0	2210.7	3336.2	3618.9	260.9	9765.7

Southwest

(Actual)

	Def	Prob	Probn	Defn	Dk	N
Army	208	1574	5931	6626	281	14620
Navy	161	1330	3338	3406	147	8382
Air Force	148	1407	4418	4659	242	10874
Marine Corps	146	1330	4191	4857	170	10694
Military Service	386	2892	5343	5633	366	14620

Southwest

(Expected)

	Def	Prob	Probn	Defn	Dk	N
Army	216.8	1749.0	5648.3	6707.3	327.9	14649.3
Navy	145.3	1149.6	3237.0	3688.6	188.3	8409.8
Air Force	232.4	1641.4	4229.8	4520.9	269.9	10884.4
Marine Corps	132.7	1079.4	4071.4	5205.4	239.6	10728.5
Military Service	500.3	3276.1	4989.5	5427.9	388.5	14583.3

West

(Actual)

	Def	Prob	Probn	Defn	Dk	N
Army	71	620	2612	3501	190	6994
Navy	122	960	2592	3169	205	6994
Air Force	173	1436	3334	3686	242	8871
Marine Corps	73	530	2523	3673	189	6988
Military Service	233	1385	2360	2793	223	6994

West

(Expected)

	Def	Prob	Probn	Defn	Dk	N
Army	103.6	838.5	2703.1	3205.0	157.7	7009.9
Navy	121.3	954.6	2695.3	3086.9	157.7	7016.8
Air Force	189.8	1341.9	3445.4	3681.0	219.9	8878.0
Marine Corps	87.6	703.9	2656.7	3406.0	157.5	7012.7
Military Service	239.6	1570.7	2386.6	2607.6	186.1	6892.6

APPENDIX D

APPLICATION RATES BY INTENT AND SERVICE OVER TIME

Spring '76 - Fall '82

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	22.52	13.79	5.09	4.44	6.31	6.31
	(697)	(5256)	(15572)	(16921)	(729)	(39175)
Navy	18.72	9.01	3.53	2.78	5.93	4.35
	(721)	(5769)	(15622)	(16287)	(776)	(39175)
Air	12.29	7.32	3.16	2.46	3.90	3.80
Force	(895)	(6419)	(15789)	(15228)	(846)	(39175)
Marine	9.67	3.91	1.36	1.14	1.51	1.65
Corps	(538)	(4295)	(15307)	(18308)	(727)	(39175)
Military	46.68	30.62	14.05	10.99	20.58	18.42
Service	(1476)	(9524)	(13691)	(13478)	(1006)	(39175)

Application Rates (cont'd)

Fall '76

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	20.00	13.37	4.24	4.58	5.95	5.60
	(45)	(389)	(1463)	(1682)	(84)	(3663)
Navy	23.73	11.76	4.24	3.13	3.85	5.00
	(59)	(459)	(1440)	(1627)	(78)	(3663)
Air Force	8.54	8.75	2.65	1.96	4.81	3.41
	(82)	(514)	(1435)	(1528)	(104)	(3663)
Marine Corps	11.43	3.85	1.41	0.82	3.95	1.47
	(35)	(312)	(1417)	(1823)	(104)	(3663)
Military Service	44.44	29.53	12.65	9.67	20.37	16.82
	(126)	(850)	(1265)	(1314)	(108)	(3663)

Application Rates (cont'd)

Fall '77

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	33.33	11.98	5.95	4.60	9.09	6.82
	(60)	(509)	(1362)	(1436)	(66)	(3433)
Navy	19.23	7.18	3.39	2.90	8.96	4.31
	(78)	(585)	(1326)	(1377)	(67)	(3433)
Air Force	10.53	6.27	3.38	1.83	1.32	3.41
	(76)	(606)	(1360)	(1315)	(76)	(3433)
Marine Corps	9.68	2.33	1.06	0.90	3.03	1.34
	(62)	(429)	(1326)	(1550)	(66)	(3433)
Military Service	43.55	28.94	14.01	9.39	22.54	17.39
	(124)	(857)	(1199)	(1182)	(71)	(3433)

Application Rates (cont'd)

Fall '78

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	14.75	16.48	6.05	5.10	3.13	7.10
	(61)	(449)	(1290)	(1530)	(64)	(3394)
Navy	21.05	8.56	3.90	2.86	8.33	4.66
	(76)	(514)	(1333)	(1399)	(72)	(3394)
Air	12.94	7.96	3.64	2.85	6.67	4.36
Force	(85)	(565)	(1320)	(1334)	(90)	(3394)
Marine	2.70	5.36	1.83	1.10	1.37	1.89
Corps	(37)	(392)	(1259)	(1633)	(73)	(3394)
Military	49.62	34.92	16.61	13.24	18.89	20.80
Service	(131)	(756)	(1186)	(1231)	(90)	(3394)

Application Rates (cont'd)

Fall '79

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	18.75	15.95	5.17	4.84	5.95	6.60
	(48)	(395)	(1219)	(1404)	(84)	(3150)
Navy	22.50	9.70	3.47	3.26	4.60	4.57
	(40)	(464)	(1210)	(1349)	(87)	(3150)
Air Force	20.24	6.71	2.92	3.38	3.96	4.19
	(84)	(492)	(1199)	(1274)	(101)	(3150)
Marine Corps	12.82	4.39	1.67	1.48	0.00	1.97
	(39)	(342)	(1200)	(1489)	(80)	(3150)
Military Service	46.73	34.34	15.59	13.53	20.20	20.19
	(107)	(693)	(1142)	(1109)	(99)	(3150)

Application Rates (cont'd)

Fall '80

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	24.56	12.82	4.92	4.36	1.85	6.03
	(57)	(459)	(1200)	(1446)	(54)	(3186)
Navy	18.97	8.60	4.41	3.67	7.14	4.93
	(58)	(407)	(1247)	(1418)	(56)	(3186)
Air Force	0.00	4.04	3.50	3.49	10.00	3.64
	(34)	(371)	(1316)	(1405)	(60)	(3186)
Marine Corps	13.89	4.06	1.81	1.17	2.00	1.88
	(36)	(345)	(1216)	(1539)	(50)	(3186)
Military Service	49.65	28.59	15.55	10.55	23.33	18.49
	(141)	(738)	(1061)	(1156)	(90)	(3186)

Application Rates (cont'd)

Fall '81

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	22.54	13.14	4.86	4.67	4.48	6.37
	(71)	(449)	(1188)	(1349)	(67)	(3124)
Navy	10.00	7.07	3.28	2.59	6.94	3.75
	(50)	(467)	(1221)	(1314)	(72)	(3124)
Air Force	8.24	5.76	2.73	2.09	1.56	3.20
	(85)	(608)	(1171)	(1196)	(64)	(3124)
Marine Corps	11.54	5.41	1.52	1.04	1.47	1.92
	(52)	(370)	(1183)	(1446)	(68)	(3124)
Military Service	39.73	29.15	13.43	10.61	22.92	18.28
	(146)	(844)	(1020)	(1018)	(96)	(3124)

Application Rates (cont'd)

Fall '82

Service	% Def (N)	% Prob (N)	% Probn (N)	% Defn (N)	% DK (N)	% Total (N)
Army	21.98	13.56	5.54	2.96	2.00	6.18
	(91)	(612)	(1532)	(1421)	(50)	(3706)
Navy	11.59	8.16	2.59	1.92	5.66	3.26
	(69)	(490)	(1584)	(1510)	(53)	(3706)
Air Force	8.18	5.11	2.04	1.76	1.64	2.67
	(110)	(666)	(1565)	(1304)	(61)	(3706)
Marine Corps	8.77	2.97	1.22	0.79	0.00	1.32
	(57)	(404)	(1556)	(1636)	(53)	(3706)
Military Service	38.59	22.74	11.79	9.80	13.16	15.65
	(184)	(1038)	(1357)	(1051)	(76)	(3706)

APPENDIX E

LOCAL AREA SAMPLE SIZE AND NATIONAL INTEREST LEVELS BY AGE

Sample Size
(Army)

Region	16	17	18	19	20	21	N
Northwest	2568	2541	1911	1535	1089	830	10474
Northeast	3993	3683	2751	2113	1651	1301	15492
Southeast	2499	2326	1727	1378	1062	775	9770
Southwest	3555	3502	2551	2078	1687	1247	14620
West	1779	1562	1256	1006	769	602	6994
Total	14394	13634	10196	8110	6261	4755	57350

Sample Size (cont'd)
(Air Force)

Region	16	17	18	19	20	21	N
Northwest	2999	3046	2206	1776	1313	1003	12343
Northeast	3472	3201	2363	1817	1435	1132	13420
Southeast	3020	2808	2115	1674	1281	944	11842
Southwest	2654	2584	1895	1548	1265	931	10874
West	2249	1995	1620	1295	967	745	8871
Total	14394	13634	10196	8110	6261	4755	57350

Sample Size (cont'd)

(Navy)

Region	16	17	18	19	20	21	N
Mideast	2662	2544	1943	1578	1231	893	10851
Northwest	2672	2703	1942	1560	1227	977	11081
Northeast	3089	2813	2084	1595	1274	1006	11861
Southeast	2129	1969	1419	1135	907	622	8181
Southwest	2063	2023	1552	1236	853	655	8382
West	1779	1582	1256	1006	769	602	6994
Total	14394	13634	10196	8110	6261	4755	57350

(Marine Corps)

Region	16	17	18	19	20	21	N
Mideast	2957	2825	2157	1710	1330	973	11952
Northwest	2762	2658	1975	1596	1250	975	11216
Northeast	2271	2066	1490	1164	916	737	8644
Southeast	2052	1878	1364	1085	882	595	7858
Southwest	2574	2628	1955	1549	1115	873	10694
West	1778	1579	1255	1006	768	602	6988
Total	14394	13634	10196	8110	6261	4755	57350

National Interest Levels

(Army)

Age	% Def	% Prob	% Probn	% Defn	% DK
16	1.9	16.4	41.7	37.2	2.8
17	1.9	14.0	40.5	41.3	2.4
18	1.3	11.4	37.5	47.8	2.1
19	1.4	9.0	36.2	51.7	1.7
20	0.9	8.2	34.9	54.5	1.6
21	1.1	7.0	32.6	57.8	1.5
Total	1.5	12.2	38.4	45.7	2.2

(Air Force)

Age	% Def	% Prob	% Probn	% Defn	% DK
16	3.0	20.4	40.6	33.2	2.9
17	2.5	17.7	40.3	36.7	2.8
18	1.7	14.2	38.7	43.2	2.2
19	1.4	11.4	38.2	47.0	2.0
20	1.1	9.8	36.3	50.9	1.9
21	1.0	8.9	34.2	54.2	1.7
Total	2.1	15.3	38.8	41.5	2.4

National Interest Levels

(Marine Corps)

Age	% Def	% Prob	% Probn	% Defn	% DK
16	1.8	14.3	41.6	39.6	2.7
17	1.4	11.6	40.6	44.3	2.2
18	1.2	9.2	36.6	51.5	1.9
19	0.9	7.3	34.7	55.4	1.7
20	0.6	6.3	33.1	58.3	1.8
21	0.8	6.0	31.5	60.2	1.5
Total	1.3	10.2	37.7	48.7	2.1

(Navy)

Age	% Def	% Prob	% Probn	% Defn	% DK
16	2.6	18.0	41.1	35.4	2.7
17	1.8	15.7	40.7	39.5	2.4
18	1.4	12.7	37.9	45.9	2.2
19	1.0	10.4	36.7	50.1	1.8
20	0.8	9.2	34.9	53.3	1.8
21	1.1	8.0	32.6	56.9	1.5
Total	1.6	13.6	38.4	44.0	2.3

National Interest Levels

(Military Service)

Age	% Def	% Prob	% Probn	% Defn	% DK
16	5.2	30.7	34.2	26.6	3.4
17	4.7	26.6	35.2	30.4	3.1
18	2.9	20.2	34.7	39.5	2.7
19	1.8	16.3	34.1	45.4	2.4
20	1.3	14.1	33.0	49.5	2.4
21	1.3	12.3	32.0	52.3	2.1
Total	3.4	22.5	34.2	37.1	2.8

APPENDIX F

INITIAL APPLICATION MODEL ESTIMATES

Military Service

Variable	Estimate	Error	Chi Square
Intercept	0.0057	0.1141	0.00*
Black	0.0585	0.1274	0.21*
Age17	-0.0213	0.0381	0.31*
Age18	-0.0016	0.0415	0.00*
Age19	-0.1681	0.0466	13.00
Age20	-0.1639	0.0518	10.01
Age21	-0.2418	0.0597	16.40
Southeast	-0.1394	0.1487	0.88*
Northwest	-0.1212	0.1639	0.55*
Southwest	-0.2562	0.1546	2.75*
West	-0.0186	0.1870	0.01*
Spring '76	-0.0264	0.0763	0.12*
Fall '76	-0.0938	0.0654	2.06*
Spring '77	-0.0614	0.0639	0.92
Spring '78	-0.0102	0.0685	0.02*
Fall '78	0.1719	0.0644	7.12

Model Estimates (cont'd)

Spring '79	0.1850	0.0648	8.15
Fall '79	0.1574	0.0657	5.57
Spring '80	0.0576	0.0650	0.78*
Fall '80	0.0065	0.0666	0.01*
Fall '81	-0.0736	0.0672	1.20*
Fall '82	-0.2342	0.0663	18.35
Probably	-0.8106	0.1133	51.20
Probably Not	-1.7806	0.1157	236.71
Definitely Not	-2.0372	0.1165	305.95
Don't Know	-1.4500	0.1960	54.75
race*intent			
1	0.4003	0.1406	8.10
2	0.7177	0.1502	22.84
3	0.8573	0.1494	32.92
4	0.5100	0.2530	4.06
region*intent			
1	0.1140	0.1623	0.49*
2	0.2020	0.1669	1.46*
3	0.1290	0.1712	0.57*
4	-0.0403	0.2913	0.02*
5	-0.0223	0.1771	0.02*
6	0.0136	0.1807	0.01*

Model Estimates (cont'd)

7	-0.0336	0.1839	0.03*
8	0.1727	0.2883	0.36*
9	0.2056	0.1678	1.50*
10	0.1659	0.1693	0.96*
11	0.0235	0.1724	0.02*
12	0.6723	0.2677	6.31
13	0.1196	0.2050	0.34*
14	-0.0706	0.2087	0.11*
15	0.0122	0.2103	0.00*
16	-0.1730	0.3482	0.25*

Note: * Denotes insignificance at the 5% level.

Intermediate Application Model
(Army)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.3909	0.104	180.45
Blacks	0.8355	0.051	267.87
Age19/20	0.0054	0.051	0.01*
Age21	0.0576	0.082	0.49*
Probably (MS)	-0.2491	0.086	8.43
Probably Not (MS)	-0.8405	0.094	80.39
Definitely Not (MS)	-1.0913	0.099	122.53
Don't Know (MS)	-0.4282	0.152	7.99
Probably (A)	-0.3380	0.108	9.72
Probably Not (A)	-0.9660	0.111	76.16
Definitely Not (A)	-0.9534	0.112	72.46
Don't Know (A)	-0.9746	0.192	25.82

Note: Model Chi-Square = 1540.74 with 11 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

Intermediate Application Model
(Navy)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.1577	0.111	108.41
Blacks	-0.2833	0.081	12.38
Age19/20	-0.1328	0.062	4.61
Age21	-0.2894	0.109	7.01
Probably (MS)	-0.2913	0.101	8.40
Probably Not (MS)	-0.7739	0.110	49.78
Definitely Not (MS)	-0.7897	0.116	46.46
Don't Know (MS)	-0.3995	0.177	5.08
Probably (N)	-0.6871	0.113	36.97
Probably Not (N)	-1.4531	0.117	155.35
Definitely Not (N)	-1.6243	0.121	179.15
Don't Know (N)	-1.0639	0.195	29.75

Note: Model Chi-Square = 909.05 with 11 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

Intermediate Application Model
(Air Force)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-1.8899	0.120	248.19
Blacks	0.2740	0.273	14.21
Age19/20	-0.2063	0.067	9.62
Age21	-0.3119	0.116	7.27
Probably (MS)	-0.1432	0.115	1.56*
Probably Not (MS)	-0.3829	0.123	9.78
Definitely Not (MS)	-0.5952	0.130	21.01
Don't Know (MS)	-0.3527	0.207	2.91*
Probably (AF)	-0.4336	0.122	12.57
Probably Not (AF)	-1.1414	0.127	81.03
Definitely Not (AF)	-1.2581	0.132	90.43
Don't Know (AF)	-0.9823	0.221	19.82

Note: Model Chi-Square = 561.95 with 11 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

Intermediate Application Model
(Marine Corps)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-2.0047	0.167	143.79
Blacks	0.3496	0.103	11.47
Age19/20	-0.2728	0.103	7.07
Age21	-0.3391	0.176	3.72*
Probably (MS)	-0.4046	0.144	7.93
Probably Not (MS)	-0.9321	0.160	33.90
Definitely Not (MS)	-1.0176	0.169	36.35
Don't Know (MS)	-0.6240	0.288	4.69
Probably (MC)	-0.7335	0.176	17.34
Probably Not (MC)	-1.4927	0.178	70.00
Definitely Not (MC)	-1.5670	0.181	75.31
Don't Know (MC)	-1.5468	0.355	18.93

Note: Model Chi-Square = 484.18 with 11 d.f. (5% level)
* These variables were found to be insignificant at the 5% significance level.

Intermediate Application Model
(Military Service)

Variable	Coefficient	Standard Error	Chi Square
Intercept	-0.2508	0.054	21.93
Blacks	0.5975	0.038	242.09
Age19/20	-0.1751	0.033	28.49
Age21	-0.2494	0.055	20.57
Probably	-0.6262	0.057	119.74
Probably Not	-1.5464	0.059	697.53
Definitely Not	-1.8172	0.060	914.06
Don't Know	-1.1274	0.094	142.83

Note: Model Chi-Square = 2682.72 with 7 d.f. (5% level)

APPENDIX G

INITIAL POSITIVE PROPENSITY MODEL ESTIMATES

Positive Propensity Model Estimates
(Military Service)

Variable	Estimate	Standard Error	Chi Square
Intercept	-0.7856	0.0236	1108.34
Black	0.4569	0.0235	377.14
Age17	0.4018	0.0432	86.45
Age18	0.0873	0.0459	3.62*
Age19	-0.2199	0.0522	17.73
Age20	-0.3733	0.0614	36.91
Age21	-0.4179	0.0652	41.14
Northwest	0.0800	0.0372	4.64
Southeast	0.2784	0.0366	57.82
Southwest	-0.2034	0.0443	21.07
West	-0.1256	0.0693	3.28*
Spring '76	0.0812	0.0495	2.69*
Fall '76	-0.0673	0.0375	3.22*
Spring '77	-0.0589	0.0362	2.64*
Spring '78	-0.1387	0.0424	10.72
Fall '78	-0.1442	0.0392	13.51

Model Estimates (cont'd)

Spring '79	-0.1062	0.0399	7.10
Fall '79	-0.1418	0.0408	12.08
Spring '80	0.1247	0.0376	11.02
Fall '80	-0.0222	0.0392	0.32*
Fall '81	0.1836	0.0387	22.53
Fall '82	0.2854	0.0355	64.77
Age*Region (20)			
1	0.0747	0.0665	1.26*
2	-0.0804	0.0712	1.28*
3	0.0209	0.0800	0.07*
4	0.0836	0.0996	0.70*
5	-0.0254	0.1060	0.06*
6	-0.1300	0.0662	3.86
7	0.0581	0.0714	0.66*
8	0.1316	0.0808	2.65*
9	0.0363	0.0913	0.16*
10	-0.1417	0.1069	1.76*
11	-0.0032	0.0757	0.00*
12	0.0704	0.0877	0.64*
13	-0.0721	0.0996	0.52*
14	-0.0901	0.1205	0.56*
15	-0.0065	0.1213	0.00*

Model Estimates (cont'd)

16	0.0916	0.1340	0.47*
17	-0.0164	0.1362	0.01*
18	-0.0889	0.1527	0.34*
19	-0.0475	0.1820	0.07*
20	0.1688	0.1841	0.84*
Race*region			
1	0.0507	0.0372	1.86*
2	0.0727	0.3660	3.94
3	-0.0149	0.0443	0.11*
4	-0.0552	0.0693	0.63*
Race*Age			
1	-0.1264	0.0432	8.56
2	0.0514	0.0459	1.26*
3	0.0786	0.0522	2.27*
4	0.0915	0.0615	2.22*
5	0.1822	0.0651	7.83
Race*Age*Region			
1	0.0850	0.0665	1.63*
2	-0.0823	0.0712	1.34*
3	-0.0381	0.0801	0.23*
4	0.1580	0.0996	2.52*
5	-0.0766	0.1060	0.52*
6	0.0009	0.0662	0.00*

Model Estimates (cont'd)

7	-0.0109	0.0714	0.02*
8	0.0940	0.0808	1.35*
9	-0.0380	0.0713	0.17*
10	-0.1464	0.1069	1.88*
11	-0.0648	0.0757	0.73*
12	0.1077	0.0876	1.51*
13	-0.0709	0.0997	0.51*
14	0.0466	0.1205	0.15*
15	-0.0356	0.1213	0.09*
16	-0.0391	0.1340	0.09*
17	0.0633	0.1362	0.22*
18	0.0190	0.1527	0.02*
19	-0.0344	0.1820	0.04*
20	0.1394	0.1841	0.57*

Note: * Denotes insignificance at the 5% level.

APPENDIX H

QUALITY MODEL ESTIMATES AND RESULTS

Summary of Variables
Quality Model

Variable	Description
Race (2)	A dummy variable whose value is 0 if individual is black and 1 otherwise
Age (6)	Respondents age at survey (16-21)
Region (5)	Respondents residence at survey (Northeast, Northwest, Southeast, Southwest, West)
Ed Status (3)	Education status of individual at time of survey (HSDG, NHSDG, or HSJR)
Father's ed (3)	Highest level of education obtained by individuals' father at time of survey (less than HS, HSG, Greater than HS)
# Math Courses (5)	Number of math courses passed at time of survey (range 0-4)
GPA (4)	Grade point average at time of survey (A & B, B & C, C & D, D & below)

Note: Army regions were used for overall military service model.

Quality Model Estimates

Variable	Coefficient	Standard Error	Chi Square
Intercept	-0.6180	0.109	32.02
HSDG	0.7912	0.095	68.94
HSJR	0.6769	0.097	48.34
Black	-1.6608	0.087	362.04
HSG	0.4420	0.067	43.01
Greater than HSG	0.7403	0.071	109.52
Math1	0.0686	0.070	0.95*
Math2	0.6084	0.081	56.77
Math3	1.0463	0.095	122.30
Math4	1.6379	0.135	146.93
Southwest	0.1797	0.071	6.44
Southeast/ Midwest	-0.1797	0.071	6.44
GPA2	-0.6531	0.068	92.34
GPA3	-1.1216	0.086	170.52
GPA4	-1.6420	0.267	37.99

Note: The model chi-square = 1472.09 with 14 d.f.
Asteriks represents insignificance at the 5% level.

Classification Tables of Quality Results

(Overall)

Predicted

		Negative	Positive	
TRUE	NEG	2544	1125	3669
	POS	1039	2237	3276
		3583	3362	6945

Note: The Quality model correctly classifys 68.8% of the survey respondents.

(HSDG)

Predicted

		Negative	Positive	
TRUE	NEG	950	742	1692
	POS	453	1488	1941
		1403	2230	3633

Note: The Quality model correctly classifys 67.11% of the HSDG.

(NHSDG)

Predicted

		Negative	Positive	
TRUE	NEG	587	16	603
	POS	170	26	196
	Total	757	42	799

Note: The Quality model correctly classifys 76.74% of the NHSDG.

(HSJR)

Predicted

		Negative	Positive	
TRUE	NEG	978	367	1345
	POS	406	722	1128
	Total	1384	1089	2473

Note: The Quality model correctly classifys 68.75% of the HSJR.

Results of Quality Model (Southeast and Midwest)

(Father's education level less than HSG)

# of Math Courses	Grade Point Average	Probability of being Cat I-IIIA					
		HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.16	.52	.09	.34	.15	.49
	2	.09	.35	.04	.20	.08	.33
	3	.06	.25	.03	.14	.05	.23
	4	.03	.17	.02	.09	.03	.15
	1	.18	.54	.09	.36	.16	.52
	2	.10	.37	.05	.22	.09	.35
	3	.06	.27	.03	.15	.06	.25
	4	.04	.18	.02	.10	.03	.17
2	1	.27	.67	.15	.49	.25	.65
	2	.15	.50	.08	.33	.14	.48
	3	.10	.38	.05	.23	.09	.36
	4	-	-	.03	.15	-	.26
3	1	.36	.76	.22	.60	.34	.74
	2	.22	.61	.12	.43	.21	.59
	3	.15	.49	.08	.32	.14	.47
	4	-	-	.05	-	-	-
4	1	.50	.84	-	.72	.47	.83
	2	.33	.73	-	.57	.31	.71
	3	.23	.63	.13	-	-	.60
	4	-	-	-	.33	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Southeast and Midwest)

(Father's education level = HSG)

		Probability of being Cat I-IIIA					
# of Math Courses	Grade Point Average	HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.23	.62	.12	.44	.21	.60
	2	.13	.45	.07	.28	.12	.42
	3	.08	.33	.04	.20	.08	.31
	4	-	.23	.03	.13	-	.22
1	1	.25	.64	.14	.46	.23	.62
	2	.14	.47	.07	.30	.13	.45
	3	.09	.36	.05	.21	.08	.34
	4	-	.25	-	.14	.05	.23
2	1	.36	.76	.21	.60	.34	.74
	2	.22	.60	.12	.43	.20	.58
	3	.15	.49	.08	.32	.14	.47
	4	-	.36	-	-	-	-
3	1	.47	.83	.30	.70	.44	.81
	2	.30	.70	.17	.54	.28	.69
	3	.21	.60	-	.42	.20	.58
	4	-	-	-	-	-	-
4	1	.60	.89	.42	.80	.58	.88
	2	.43	.80	.27	.66	.41	.79
	3	.32	.72	-	.55	-	.70
	4	-	-	-	-	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Southeast and Midwest)

(Father's education greater then HSDG)

# of Math Courses	Grade Point Average	Probability of being Cat I-IIIA					
		HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.28	.68	-	.51	.26	.66
	2	.16	.51	.08	.34	.15	.49
	3	.11	.40	.05	.24	.10	.37
	4	-	.28	-	.16	-	.26
1	1	.30	.70	-	.53	.28	.68
	2	.17	.54	.09	.36	.16	.51
	3	.12	.42	.06	.26	.11	.40
	4	-	.30	-	.17	-	.28
2	1	.42	.80	.26	.66	.40	.79
	2	.27	.67	.15	.49	.25	.65
	3	.19	.56	.10	.38	.17	.53
	4	-	.43	-	-	-	.41
3	1	.53	.86	-	.75	.51	.85
	2	.36	.76	.22	.60	.34	.74
	3	.26	.66	.15	.48	.24	.64
	4	-	-	-	-	-	-
4	1	.66	.92	.49	.84	-	.91
	2	.49	.84	.32	.72	.47	.83
	3	.38	.77	-	.62	-	.75
	4	-	-	-	-	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Northeast and West)

(Father's education level less than HSG)

		Probability of being Cat I-IIIA					
# of Math Courses	Grade Point Average	HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.18	.55	-	.37	.17	.53
	2	.10	.38	.05	.23	.09	.36
	3	.07	.28	.03	.16	.06	.26
	4	-	.19	.02	.10	.04	.17
1	1	.20	.58	.11	.40	.18	.55
	2	.11	.40	.06	.25	.10	.38
	3	.07	.30	.04	.17	.07	.28
	4	-	.20	.02	.11	.04	.19
2	1	.30	.70	.17	.53	.28	.68
	2	.18	.54	.09	.36	.16	.52
	3	.12	.42	.06	.26	.11	.40
	4	-	-	.04	.18	-	.29
3	1	.40	.79	-	.64	.38	.77
	2	.25	.65	.14	.47	.23	.62
	3	.17	.53	-	.35	.16	.51
	4	-	.41	-	.25	-	-
4	1	.53	.86	-	.75	-	.85
	2	.36	.76	.22	.60	-	.74
	3	-	.66	-	.49	-	.64
	4	-	-	-	.36	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Northeast and West)

(Father's education level = HSDG)

# of Math Courses	Grade Point Average	Probability of being Cat I-IIIA					
		HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.26	.65	.14	.48	.24	.63
	2	.15	.48	.08	.31	.13	.46
	3	.10	.37	.05	.22	.09	.35
	4	-	.26	.03	.15	-	.24
1	1	.27	.68	.15	.50	.26	.66
	2	.16	.51	.08	.33	.15	.49
	3	.10	.39	.05	.24	.10	.37
	4	-	.28	.03	.16	-	.26
2	1	.40	.78	.24	.63	.37	.77
	2	.25	.64	.14	.46	.23	.62
	3	.17	.53	-	.35	.16	.50
	4	-	.40	-	.24	-	.38
3	1	.50	.85	.33	.73	.48	.84
	2	.34	.74	.20	.57	.32	.72
	3	.24	.63	.13	.46	-	.61
	4	-	-	-	-	-	.49
4	1	.64	.91	-	.82	.62	.90
	2	.47	.83	-	.70	.44	.81
	3	.35	.75	-	.59	-	.73
	4	-	-	-	-	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Northeast and West)

(Father's education greater then HSDG)

# of Math Courses	Grade Point Average	Probability of being Cat I-IIIA					
		HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.31	.71	-	-	-	.69
	2	.18	.55	.10	.37	.17	.53
	3	.12	.43	.06	.27	.11	.41
	4	.08	.32	.04	.18	-	.30
1	1	.33	.73	-	.57	.31	.71
	2	.20	.58	.11	.40	.18	.55
	3	.13	.46	.07	.29	.12	.44
	4	-	.34	-	.20	-	.32
2	1	.46	.83	-	.70	.44	.81
	2	.30	.70	.17	.53	.28	.68
	3	.21	.59	.11	.41	.20	.57
	4	-	.47	-	.30	-	.44
3	1	.57	.88	.39	.78	.33	.87
	2	.40	.78	.24	.64	.38	.77
	3	.29	.69	-	.52	-	.67
	4	-	.58	-	-	-	-
4	1	.70	.93	-	.86	.68	.92
	2	.53	.86	-	.75	.51	.85
	3	.42	.80	-	.65	-	.78
	4	-	-	-	-	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Southwest)

(Father's education level less than HSG)

# of Math Courses	Grade Point Average	Probability of being Cat I-IIIA					
		HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.21	.59	-	.42	.20	.57
	2	.12	.42	.06	.26	.11	.40
	3	.08	.31	.04	.18	.07	.29
	4	-	.21	.02	.12	.04	.20
1	1	.23	.62	-	.44	.21	.60
	2	.13	.45	.07	.28	.12	.42
	3	.08	.33	.04	.19	.08	.31
	4	-	.23	-	.13	-	.22
2	1	.34	.74	-	.57	-	.72
	2	.20	.58	.11	.40	.19	.56
	3	.14	.46	.07	.29	.13	.44
	4	-	-	-	.20	-	.32
3	1	.44	.81	-	.68	.42	.80
	2	.28	.68	.16	.51	.26	.66
	3	.20	.57	.11	.39	.18	.55
	4	-	-	-	.28	-	-
4	1	.58	.88	-	-	-	.87
	2	.40	.79	-	.64	.38	.77
	3	-	.70	-	.53	-	.63
	4	-	-	.11	-	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Southwest)

(Father's education level = HSG)

# of Math Courses	Grade Point Average	Probability of being Cat I-IIIA					
		HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.29	.69	-	.52	-	.67
	2	.17	.53	.09	.35	.16	.50
	3	.11	.41	-	.25	.10	.39
	4	-	.29	-	.17	-	.28
1	1	.31	.71	.18	.54	.29	.69
	2	.18	.55	.10	.37	.17	.53
	3	.12	.43	.06	.27	.11	.41
	4	-	.31	-	.18	-	.29
2	1	.44	.81	-	.67	.41	.80
	2	.28	.68	-	.51	.26	.66
	3	.19	.57	.10	.39	.18	.55
	4	-	-	-	.28	-	.42
3	1	.55	.87	.37	-	.52	.86
	2	.37	.77	.22	.61	.35	.75
	3	.27	.67	-	.50	-	.65
	4	-	.55	-	-	-	.53
4	1	.67	.92	-	-	-	.91
	2	.51	.85	-	.73	-	.84
	3	.39	.78	-	-	-	.76
	4	-	-	-	-	-	.66

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

Results of Quality Model (Southwest)

(Father's education greater then HSDG)

		Probability of being Cat I-IIIA					
# of Math Courses	Grade Point Average	HSDG		NHSDG		HSJR	
		Black	Other	Black	Other	Black	Other
0	1	.35	.75	-	-	-	.73
	2	.21	.59	-	.41	.19	.57
	3	.14	.48	.07	.30	-	.45
	4	-	.35	-	.21	-	.33
1	1	.37	.76	.22	.61	.35	.75
	2	.23	.62	.12	.44	.21	.59
	3	.15	.50	.08	.33	.14	.48
	4	.10	-	-	.23	-	.35
2	1	.50	.85	-	.73	.48	.84
	2	.34	.73	-	.57	.32	.72
	3	.24	.63	-	.46	-	.61
	4	-	.51	-	.33	-	.49
3	1	.61	.90	-	.81	.59	.89
	2	.44	.81	-	.68	.42	.80
	3	.33	.73	-	.57	-	.71
	4	-	-	-	-	-	-
4	1	.73	.94	-	.88	.71	.93
	2	.57	.38	-	.78	.55	.87
	3	-	.82	-	.69	-	.81
	4	-	.74	-	-	-	-

Note: GPA = 1 = A's & B's; GPA = 2 = B's & C's;
GPA = 3 = C's & D's; GPA = 4 = D's & below;

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